*Ministry of the Environment*

June 2009

# ANNUAL REPORT 2007-2008

## CHIEF DRINKING WATER INSPECTOR




*Protecting our environment.*

Ontario

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# Message from the Chief Drinking Water Inspector

As Ontario's new Chief Drinking Water Inspector, I am very pleased to present the fourth Chief Drinking Water Inspector's Annual Report, which highlights drinking water protection activities for the period from April 1, 2007 to March 31, 2008.

The past year has been busy for those of us who manage drinking water issues in Ontario. We have moved towards a model of continuous improvement through our provincial licensing program for municipal drinking water systems. We continue to set a national example in source protection planning through our current technical assessment and planning phase. We are dealing with important issues such as lead in our drinking water and have demonstrated how we can address these issues through collaboration and partnership, with initiatives such as the Lead Action Plan.

This year's report has a new format that provides perspectives on these successes and examples of partnerships that help to deliver safe drinking water to Ontarians. This annual report, required under the Safe Drinking Water Act, also demonstrates our commitment to transparency and accountability, providing information and performance data to reinforce your understanding of the quality of drinking water across the province. We are also using this year's report to profile key partnerships and actions that help to ensure Ontario's reputation as a leader in drinking water management.

We believe that everyone in Ontario is entitled to expect that the drinking water that comes from regulated drinking water systems is of high quality. For example, in 2007-08, municipal residential drinking wa-

ter systems across the province had more than 520,000 drinking water quality tests analyzed by licensed laboratories—and 99.85 per cent of the tests met Ontario's rigorous drinking water quality standards. This is just one of the successful results in this year's report.

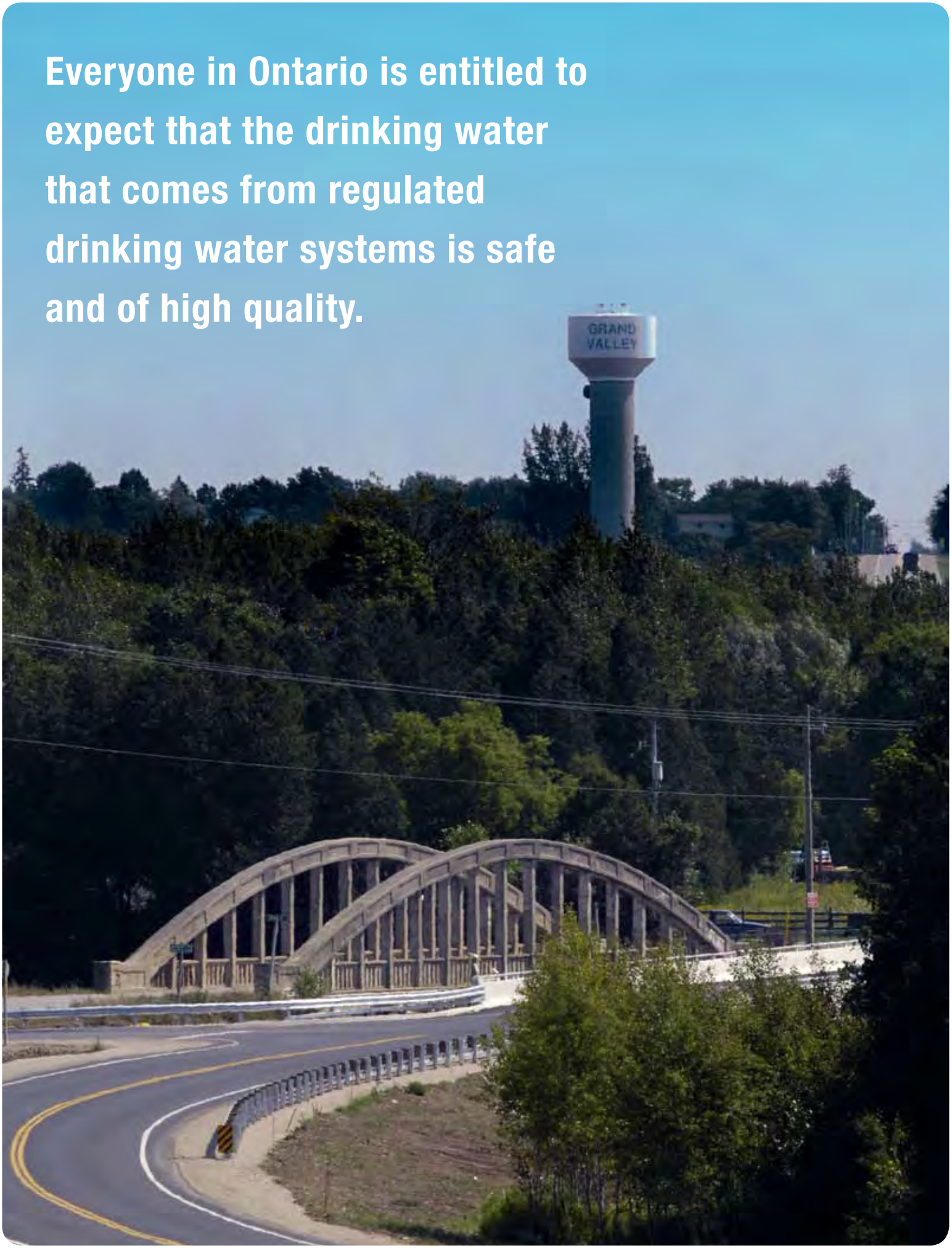
The ministry and its partners share a common commitment to excellence through continuous improvement, and we will continue to work together toward the goal of 100 per cent regulatory compliance, while continuing to identify and address areas for improvement in the future.

Since the release of the first Chief Drinking Water Inspector's Annual Report in 2006, Ontario has continued to safeguard drinking water sources and treatment systems. Ontario's drinking water safety net continues to evolve and set the example for leadership in drinking water protection.

I want to take this opportunity to thank all of our drinking water partners and stakeholders across Ontario for their hard work and continued support. Rest assured that we take our drinking water management responsibility very seriously.

**John Stager**
Chief Drinking Water Inspector

**Everyone in Ontario is entitled to expect that the drinking water that comes from regulated drinking water systems is safe and of high quality.**



# Introduction

**This is the fourth Chief Drinking Water Inspector's annual report. The report provides details on the performance of Ontario's drinking water systems between April 1, 2007 and March 31, 2008.**

Ontario's Chief Inspector is appointed under the Safe Drinking Water Act. The Chief Drinking Water Inspector plays a leadership role in ensuring that regulated drinking water systems across the province meet Ontario's rigorous, health-based standards for drinking water protection. Some of the Chief Drinking Water Inspector's other responsibilities include the oversight of:

- Developing and implementing a source protection program to minimize the risk to drinking water from **raw water** sources
- Creating and delivering training programs that improve the skills and knowledge of drinking water system operators, ministry inspectors and other stakeholders
- Providing an annual report to the Minister that describes the state of Ontario's drinking water and the actions being taken to protect it
- Making sure that the ministry meets its legal and regulatory obligations for inspecting municipal residential drinking water systems and laboratories licensed to perform drinking water testing.

This report provides an overview of Ontario's drinking water and includes statistics on inspection and drinking water quality test results, to help inform the public about the safety and quality of their drinking water. In some cases, the information provided in this report goes beyond the fiscal year end of March 31, 2008.

A drinking water treatment plant interior.

# 2007-08 Report Highlights

**The findings contained in this report should reinforce the public's confidence in their drinking water.**

Key 2007-08 report findings regarding the performance of Ontario's drinking water systems include:

- 99.85 per cent of drinking water tests reported by municipal residential drinking water systems met the province's rigorous, health-based drinking water quality standards during the year. These systems serve more than 80 per cent of Ontario's population
- 99.40 per cent of drinking water quality tests reported by non-municipal year-round residential drinking water systems met provincial standards
- 99.39 per cent of drinking water quality tests reported by systems serving designated facilities met provincial standards
- As required by provincial law, the ministry inspected all municipal residential drinking water systems in the province, to monitor regulatory compliance at their facilities. Fifty per cent of all municipal residential drinking water system inspection ratings were 100 per cent (i.e., had no regulatory compliance problems) and 95 per cent of these systems achieved ratings of 90 per cent or better

- Ministry staff conducted a total of 114 inspections at 56 laboratories licensed to perform drinking water testing during 2007-08, including 53 inspections that were unannounced. The ministry thus met the regulatory requirement that every licensed laboratory receive at least two inspections each year.

Other highlights contained within the report include:

- Ongoing work by Source Protection Committees to finalize and submit their terms of reference documents for approval
- Continuing progress on the new Municipal Drinking Water Licensing Program
- The results from the first year of drinking water system testing in schools, private schools, day nurseries and round 1 community testing in relation to Ontario's Lead Action Plan
- The transfer of oversight responsibilities for small drinking water systems from the Ministry of the Environment to the Ministry of Health and Long-Term Care.

## TAPPING IN

### Drinking Water System Facility Types

For the purposes of this report, detailed information is provided on three groupings of drinking water systems that may include more than one category of drinking water system as described by O. Reg. 170/03. These groupings of systems will be referred to in the report as facility types and are described as follows:

**Municipal residential drinking water systems –** drinking water systems or part of a drinking water system that serve six or more private residences that meet the definition of municipal drinking water system* including the categories of large municipal residential and small municipal residential drinking water systems under O. Reg. 170/03.

**Non-municipal year-round residential drinking water systems–** means a non-municipal drinking water system (other than a seasonal residential system) that serves a major residential development (six or more private residences) or a trailer park or campground with more than five service connections. These systems are a single category defined in O. Reg. 170/03.

**Drinking water systems serving designated facilities –** for example, drinking water systems serving children's camps, daycare centres, schools or health care facilities. These systems fall under the five categories of non-residential and seasonal residential systems defined in O. Reg. 170/03. They are large municipal non-residential, small municipal non-residential, large non-municipal non-residential, small non-municipal non-residential and non-municipal seasonal residential categories of drinking water systems.

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* A municipal drinking water system is a drinking water system or part of a drinking water system:

- That is owned by a municipality or by a municipal service board established under the Municipal Act (MA), 2001 or a city board established under the City of Toronto Act (CTA), 2006
- That is owned by a corporation established under sections 9, 10 and 11 of the MA in accordance with section 203 of that act or under sections 7 and 8 of the CTA in accordance with sections 148 and 154 of that act
- From which a municipality obtains or will obtain water under the terms of a contract between the municipality and the owner of the system; or
- That serves a major residential development (six or more private residences) and is established after May 2, 2003 under an agreement with a municipality pursuant to Part VI of the Planning Act, if the agreement provides that ownership of the system may be transferred to the municipality, a municipal service board established under section 195 of the MA or a corporation established under section 203 of that act.


**Our safety net gives Ontarians the confidence that their municipal drinking water systems are providing safe, high quality tap water.**

An Ontario drinking water inspector and a drinking water plant operator during a plant inspection.

# Ontario's Drinking Water Safety Net

**The ministry and its partners are continually working to strengthen the components of the safety net.**

The government has established a drinking water safety net to guide its approach to delivering safe drinking water in Ontario. It builds on the concept that delivering safe drinking water requires a number of key factors woven together to create a web or "net" that minimizes risks to our drinking water. In the pages that follow, we have modified the description of the safety net to better explain its key elements and to emphasize the comprehensive source-to-tap focus. While the description has evolved, the fundamental elements have not changed. The safety net stresses that all of our activities to deliver safe drinking water are inter-related, and together provide the foundation for an effective drinking water protection system. See **Figure 1**.

The safety net is made up of:

1. **Source-to-tap focus —** The basis of the safety net is our belief that strong drinking water protection needs to start at the source and continue until you turn on your tap. Safeguards are in place at every step of the process to address risks to the quality of your drinking water, and deal with potential problems before they become issues.

2. **A strong legislative and regulatory framework —** Ontario's strong laws establish clear rules for drinking water safety and protection. This framework allows everyone to understand the requirements and how they are applied. The Safe Drinking Water Act, the Clean Water Act and their regulations protect drinking water sources, regulate drinking water systems and set out standards for the microbiological and chemical content and other properties of drinking water.

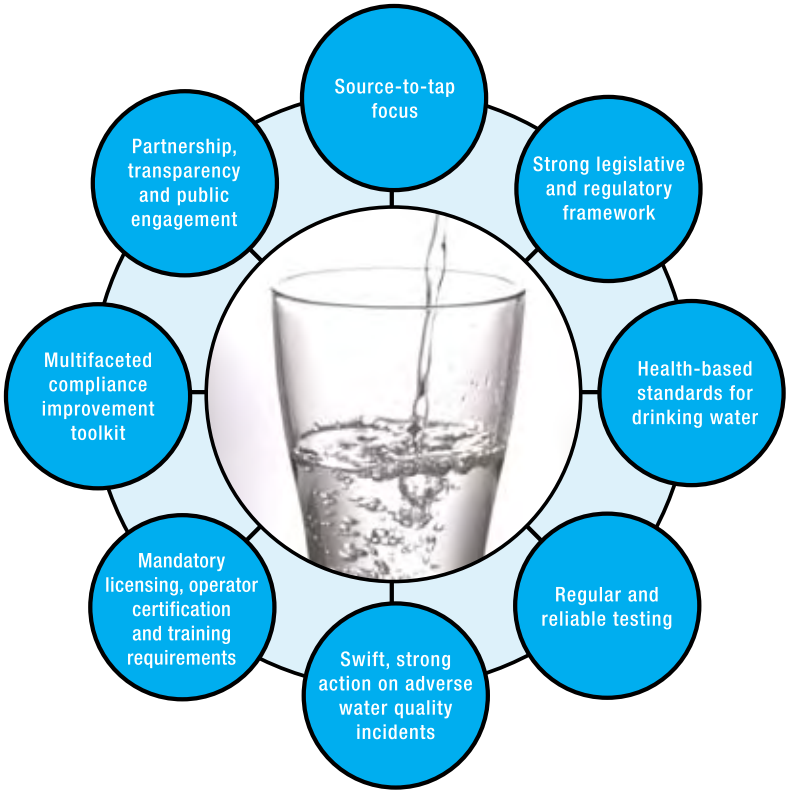
3. **Health-based standards for drinking water —** Ontario has regulated health-based standards for 158 parameters, and drinking water systems perform thousands of tests a year to make sure they are being met. To assist the ministry in setting these standards, we have an Advisory Council on Drinking Water Quality and Setting Standards who make recommendations to the Minister to help ensure Ontario's standards for drinking water quality and testing are consistent with the most up-to-date information and practices, and that the standards-setting process is transparent. Standards are based on the best available science, and are regularly reviewed to provide the highest possible level of protection.

**CHIEF'S PERSPECTIVE:**

Everyone in Ontario is entitled to expect that the drinking water their regulated systems deliver is safe and of high quality. Ontario has implemented a system of safeguards that protect drinking water from the source to the tap.

4. **Regular and reliable testing—** Protecting drinking water requires regular sampling and rigorous scientific testing to confirm that it meets Ontario's strict health-based standards. System operators take thousands of drinking water samples every year, and these samples are tested for quality at provincially licensed laboratories. Testing is undertaken on a continuous basis and the tests are tailored according to the nature of the drinking water system.

**FIGURE 1:** The Drinking Water Safety Net




Further information on the safety net is available online, at www.ontario.ca/drinkingwater, and from the ministry's Public Information Centre at (416) 325-4000 or 1-800-565-4923 (toll-free).

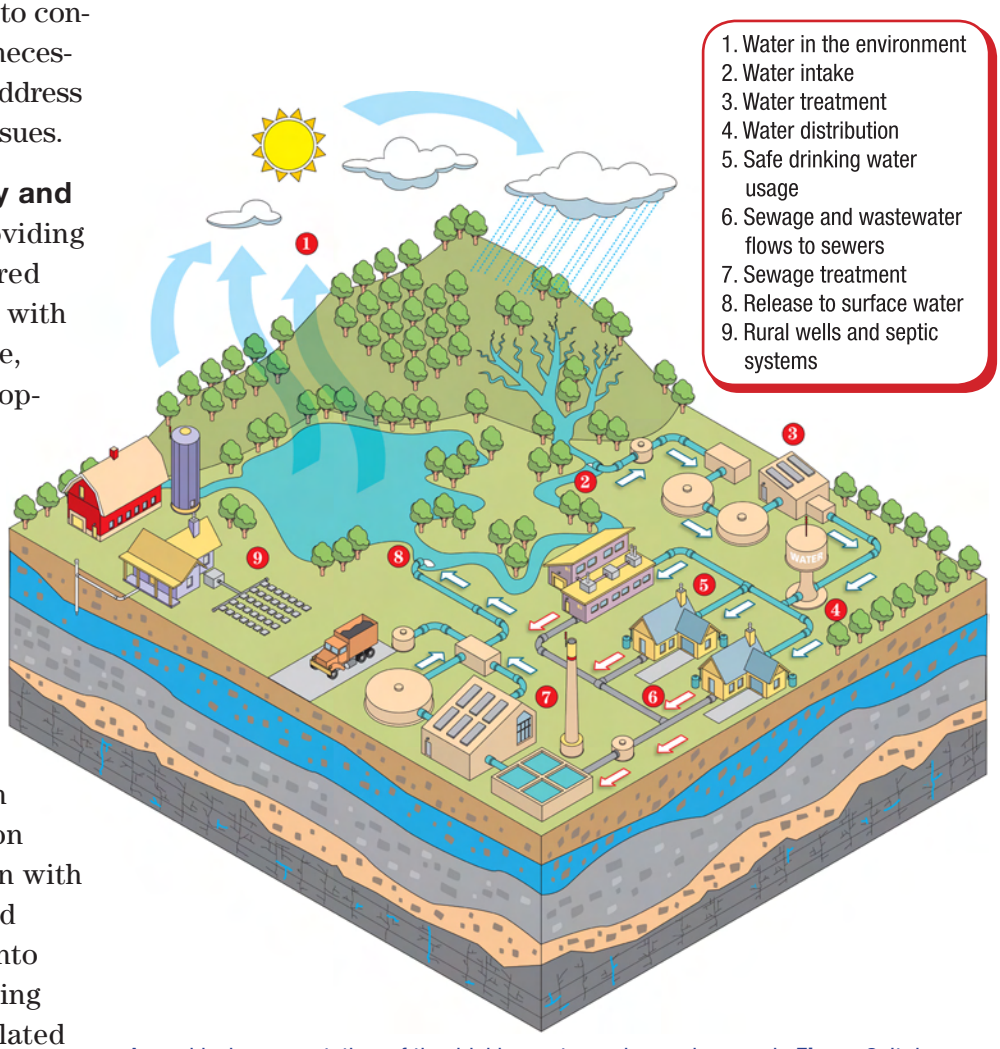
5. **Swift, strong action on adverse water quality incidents —** When drinking water safety or quality problems are suspected, we have a system in place – based on precaution – to resolve the issue quickly. We have people who are on-call to address any issue that arises, and checks and balances to make sure that **corrective action** is taken. Adverse water quality incidents require the engagement of system operators, drinking water inspectors, the ministry's Spills Action Centre and public health inspectors—all of whom work together to take effective action.

6. **Mandatory licensing, operator certification and training requirements—** With the introduction of the municipal licensing program, municipal residential drinking water systems will be required to incorporate a drinking water quality management approach at their facility to enhance consumer protection. Operating a drinking water system is one of the most important responsibilities in any community. System operators are required to meet rigorous, mandatory standards that ensure they have the knowledge and skills to provide safe drinking water to the public. The goal in any community is to have operators appropriately certified and trained. The government works to provide training that is tailored for individual types of systems and communities, enabling high standards of capacity and knowledge across Ontario.

**7. A multifaceted compliance improvement toolkit —** Compliance with Ontario's drinking water laws and regulations is mandatory, and those responsible for providing drinking water to the public are required to operate their systems in compliance with the law. In support of that requirement, we undertake a range of activities, including effective targeting based on the level of risk, providing compliance support tools to increase understanding and enable informed and effective actions, targeted inspections to confirm compliance and, where necessary, enforcement action to address significant non-compliance issues.

**8. Partnership, transparency and public engagement —** Providing safe drinking water is a shared responsibility, and we work with many partners – for example, municipalities, owners and operators, local health units, the Walkerton Clean Water Centre and stakeholder associations – to make sure high quality tap water is delivered to your homes. Our efforts to protect drinking water sources are undertaken in conjunction with local source protection committees and conservation authorities; and consultation with the public, stakeholders, and local First Nations is built into the source protection planning process. Engaging the regulated community and the public on drinking water issues is a key element of the safety net. Our aim is to be proactive in working with our partners, and provide clear information to support the regulated community in achieving excellence and meeting Ontario's legal requirements. We provide the public with information about local drinking water systems to inform, educate, and to meet our commitment to transparency and accountability.

**FIGURE 2:** The Drinking Water Cycle: From Source-to-Tap and Back Again




A graphical representation, of the drinking water cycle, can be seen in **Figure 2**. It demonstrates how water flows from the source through the water treatment process to your tap and back to the source.


The ministry takes drinking water safety very seriously and has put a broad range of effective measures in place to keep Ontario's drinking water among the most protected in the world.

# Working Together to Protect Drinking Water – Key Initiatives

**The ministry's drinking water regulations, plus a suite of complementary activities, help promote positive behavioural change among members of the regulated community.**

***This section highlights four key initiatives that demonstrate both the viability of Ontario's drinking water safety net and the strength of multi-disciplinary approaches.***

## Source Protection

### What is source protection in Ontario?

With the passage of the Clean Water Act in 2006, drinking water protection in Ontario entered a new era. This act recognizes that taking action to protect the sources that provide drinking water – Ontario's lakes, rivers and underground water supplies – is the first vital step to providing safe drinking water to people and communities. It empowers communities to be able to protect their drinking water supplies through collaborative, locally driven, **watershed**-based source protection plans.

### Leading the way in science-based source protection planning

Locally driven source protection plans represent a significant step forward for Ontario and demonstrate why the province is now considered to be among North America's leading jurisdictions in drinking water protection.

Ontario's source protection planning process is well underway in Ontario communities. This process is unique because, for the first time in Ontario, each source protection committee is preparing a science-based plan to protect the quality and quantity of drinking water sources. The act's provisions include:

- Requiring the preparation of terms of reference, science-based assessment reports, and source protection plans for all 40 source protection areas in Ontario

**DRINKING WATER FACTS:**

The Great Lakes store about 95 per cent of North America's supply of fresh water which is about one-fifth of the world's supply of fresh surface water and only one per cent of this water is renewed every year by rain and snowfall.

- Adopting a risk-based approach to protecting sources of water for municipal residential and other drinking water systems
- Specific authority to protect Great Lakes drinking water sources
- Giving municipalities and the Minister of the Environment the authority to protect drinking water sources for systems other than municipal residential drinking water systems
- Making it possible to engage First Nations communities with respect to their drinking water sources, at their request
- Establishing a financial assistance program for landowners to take action to protect sources of drinking water and to help those that may be affected by the Clean Water Act.

By December 2007, all 19 source protection committees were established. To address threats to local drinking water sources, the source protection committees are responsible for preparing terms of reference, threat assessment reports and source protection plans that cover each of the source protection areas.

The source protection committees have completed their first major

## TAPPING IN

### The Ontario Drinking Water Stewardship Program

Property owners who want to protect their local sources of drinking water or who live near a municipal well or intake are using Ontario Drinking Water Stewardship Program funding to accomplish a wide range of source protection activities across the province. Projects eligible for funding include:

- **Early action projects:** Eligible projects can include septic system upgrades and repairs; well decommissioning and upgrading; run-off and erosion protection measures; land conservation measures; pollution prevention reviews for small and medium-sized businesses; fuel storage management practices; and additional beneficial management practices to protect municipal drinking water sources.
- **Special projects:** Eligible projects can include those that complement early actions, illustrate a new or innovative approach to protecting sources of municipal drinking water, protect sources of municipal drinking water outside of source protection areas, or promote water quantity and water conservation and have a direct link to protecting municipal drinking water sources. They also include First Nations projects that protect sources of municipal drinking water and/or First Nations communal drinking water sources.
- **Education and outreach activities:** Eligible projects can include organizing community information events, holding "kitchen table" meetings with farmers, developing web sites to give communities access to source protection data, and door-to-door campaigns to talk with owners of vulnerable properties about the goals of source protection and the funding opportunities available.

task—preparing terms of reference. These are important because they outline the committees' plans for undertaking future work and the steps needed to prepare an assessment report and the source protection plan for each source protection area. By January 2009, all terms of reference documents had been submitted to the Minister of the Environment for approval.

The ministry has been supporting the source protection planning process by developing technical rules and regulations in 2008. The subject matter of the regulations and rules includes:

- Training requirements for people who enter a property under the authority of Section 88 of the act to prepare an assessment report or source protection plan
- A list of activities that are drinking water threats
- Requirements for the preparation of assessment reports, including technical rules for the scientific risk assessments as the basis of the reports
- Implementation of the Ontario Drinking Water Stewardship Program, which provides funding to farmers, property owners and small or medium businesses to take action to protect their local sources of drinking water.

The ministry posted these draft regulations and technical rules on the Environmental Bill of Rights registry for public comment, convened a series of consultation sessions across Ontario and hosted information sessions for First Nations. The new General Regulation (O. Reg. 287/07) and technical rules came into force in November 2008.

In the coming months, source protection committees will continue preparing assessment reports identifying threats in their areas. Once the assessment reports are completed and approved, the committees can begin preparing local source protection plans in earnest. The regulation requires that all source protection plans be submitted for approval to the Minister of the Environment by August 2012.

**CHIEF'S PERSPECTIVE:**

The importance of protecting the sources of drinking water cannot be overstated. Taking this proactive approach is a powerful risk mitigation tool which identifies the highest risk source water issues and enables targeted actions to address those risks.

# TAPPING IN

## Trent Conservation Coalition Partners are a Model for Source Protection Planning

Ontario's source protection committees are doing an outstanding job of developing their source protection planning documents. Trent Conservation Coalition Source Protection Committee in the Trent Conservation Coalition Source Protection Region is a great example of this level of excellence.

The source protection areas are comprised of five local conservation authorities (Crowe Valley, Ganaraska Region, Kawartha, Lower Trent and Otonabee) as well as additional areas outside of conservation authority jurisdiction, in Haliburton/Peterborough Counties.

The conservation authorities and municipalities came together to support the work of the Trent Conservation Coalition Region's source protection committee. This relationship enables the conservation authorities to share knowledge and expertise, integrate the source protection planning process and avoid duplication.

The five terms of reference for the source protection areas prepared by the region's committee were approved by the Minister of the Environment. Municipalities throughout the source protection region praised these terms of reference for their professionalism and organization. The committee is now moving forward with the technical work needed to complete the assessment reports for the source protection areas.

The region has been very active in conducting education and outreach activities. It has developed news releases, a newsletter, a toolkit and information about local seminars on source protection. It also contacted property owners within the vulnerable areas across the region. These activities led to a number of early action initiatives under the Ontario Drinking Water Stewardship Program, including 14 well decommissioning projects, two septic system upgrading projects, one runoff and erosion protection project and a pollution prevention review at a local small business.

Otonabee Conservation, one of the conservation authorities in the region, has also worked with the City of Peterborough and Trent University on retrofitting a municipal stormwater management pond to protect the raw water intake quality at the municipal water treatment plant. During 2007-08, the first phase of this project received over $44,000 in Ontario Drinking Water Stewardship Program funding to help complete the pre-design work and detailed design drawings.

For more information about the Trent Conservation Coalition Source Protection Region and its source protection planning process, please visit **www.trentsourceprotection.on.ca**.

**Trent Conservation Coalition Source Protection Committee**

As of the end of January 2009, the Ontario government has flowed $135 million to conservation authorities and municipalities to fund source protection planning costs. These costs include building capacity in conservation authorities to undertake source protection work, and supporting technical studies carried out by conservation authorities and municipalities.

The Clean Water Act also established the Ontario Drinking Water Stewardship Program (ODWSP) to provide financial assistance to people whose activities or properties are affected by source protection activities. The ODWSP was announced in 2006, and provides funds for early actions to protect drinking water, education and outreach activities and other drinking water related special projects. The government has committed funds to the ODWSP through to March 2011.

Implementing the act is a major undertaking that involves the ministry, many other organizations and communities. This comprehensive approach to source protection is also a clear demonstration of the government's commitment to protect our drinking water sources.

# TAPPING IN

## Getting Early Results

With the support of the Ontario Drinking Water Stewardship Program, conservation authorities throughout Ontario are helping local landowners protect their municipalities' drinking water sources and demonstrate good stewardship. Here are just a few examples:

**The Moira River (Quinte) Conservation Authority**, located in eastern Ontario, helped one property owner replace a malfunctioning septic system with a new "Eco-Flow" system. It also helped another cover the cost of sealing and capping an abandoned, unused drinking water well where the well casing was improperly sealed. Each property owner received up to 80 per cent of project costs through Ontario Drinking Water Stewardship Program funding earmarked for projects in vulnerable source water protection areas.

**The Raisin Region Conservation Authority**, located near Cornwall, used funding from the Ontario Drinking Water Stewardship Program to:

- Purchase spill response trailers. These trailers will be stationed in municipal drinking water source areas. They will provide local fire department officers, trained in spill response with resources to quickly and effectively contain dangerous spills.
- Update its Emergency Services Contact Directory. It now includes necessary services, such as heavy equipment, pump trucks and personnel, which need to be available to respond to spills 24 hours a day. The conservation authority coordinated this initiative with emergency services across the region.

**The Essex Region Conservation Authority**, in southwestern Ontario, sponsored an Ontario Drinking Water Stewardship Program project to deal with potential leakage from a fuel storage tank located about 20 feet from the Detroit River, and within the 100 metre intake protection zone (IPZ-1) of the Amherstburg municipal drinking water system. The conservation authority hired a qualified firm to excavate around the tank, remove it and the adjacent piping, and backfill the area with clean fill. It also initiated a public education campaign to inform local residents about the project and its other work in achieving the Clean Water Act's goals.

For more information on the Ontario Drinking Water Stewardship Program, visit Drinking Water Ontario at **www.ontario.ca/drinkingwater**.

## Municipal Licensing

The ministry is now implementing the Municipal Drinking Water Licensing Program. Effective January 2009, all Ontario municipal residential drinking water system owners are required to apply to the Ministry of the Environment for a municipal drinking water licence to operate their systems.

### Why a Licensing Program?

In the past, certificates of approval, issued by a Director at the Ministry of the Environment, legally gave municipalities the authority to establish, replace, alter, use or operate new or existing municipal drinking water systems or parts of their systems.

The Municipal Drinking Water Licensing Program extends the focus from the design, construction and operations of the system to the ongoing management of all aspects of the system. The program also requires that the licence to operate is reviewed every five years for each system.

The Licensing Program mandates that all municipal residential drinking water systems incorporate a quality management system into the operation and management of their systems. Ontario is the first jurisdiction in North America to mandate quality management for municipal residential drinking water systems. Quality management has been very successful in other industrial sectors and some large drinking water systems in Ontario have, in the past, voluntarily implemented these concepts. The ministry worked closely with Ontario's drinking water sector owners and operating authorities to craft our own unique "made in Ontario" quality management standard, called the Drinking Water Quality Management Standard (DWQMS). It provides a framework for operating authorities to develop and document management policies, processes and procedures.

Quality management systems endorse a proactive and preventative approach, which requires the adoption of best practices and continual improvement. The DWQMS encourages a "Plan-Do-Check-Improve" management cycle for systems.

**DRINKING WATER FACTS:**

One centimetre of rainfall drops 100,000 litres, or 100 metric tons of water, on a 100 metre by 100 metre piece of land (approximately 1.2 football fields).

## The Five Elements of the Program

The ministry will issue a licence to the owner of a municipal residential drinking water system once it has the following five elements in place:

- A Drinking Water Works Permit
- A **Permit to Take Water**
- A Financial Plan (if required)
- An Operational Plan
- An Accredited Operating Authority.

**Table 1** explains these five elements and their benefits.

## A Phased Approach

O. Reg. 188/07 provides dates by which system owners and operating authorities must apply for a drinking water licence and drinking water works permit and submit their operational plans. The application dates range from January 2009 to June 2010. Large municipalities must apply first, followed by medium-sized municipalities, followed by smaller-sized municipalities. The phase-in is also taking place geographically.

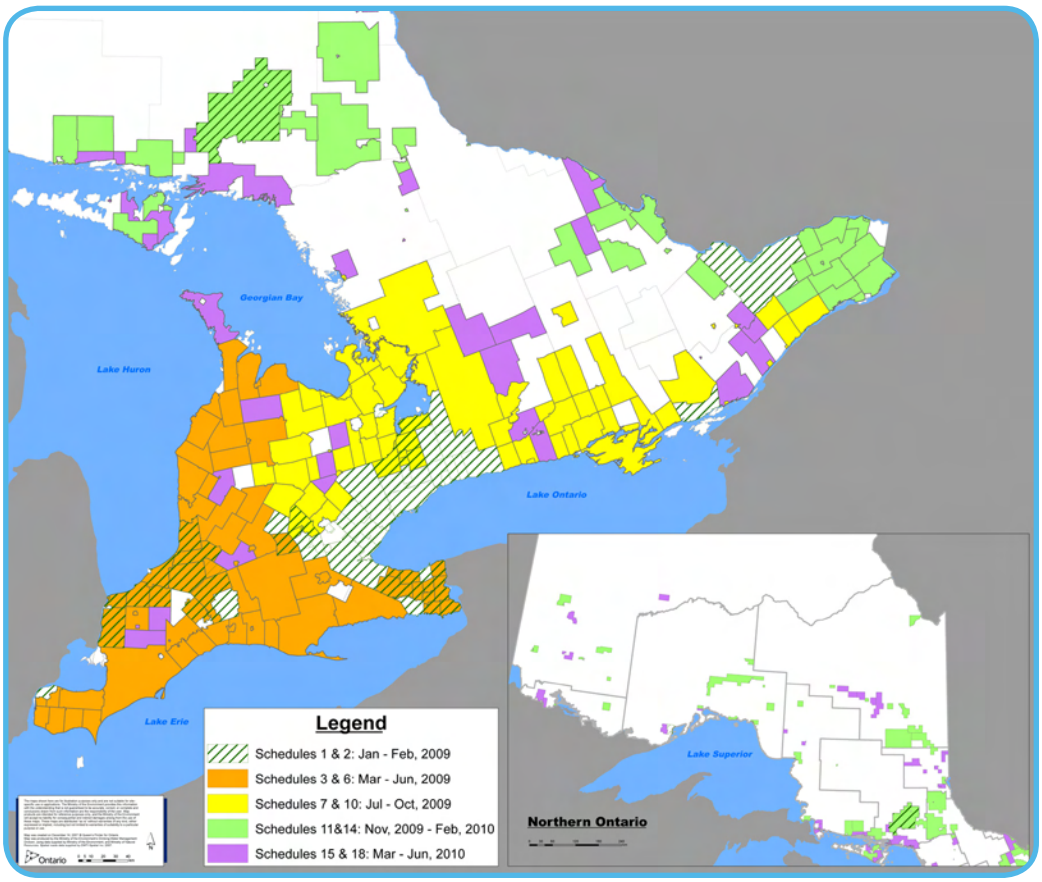
**TABLE 1:** The Five Elements of Ontario's Municipal Drinking Water Licensing Program

| Elements | Description | Benefits |
|---|---|---|
| Drinking Water Works Permit (DWWP) | Permit that gives owners the authority to establish, replace or alter their drinking water system. | The DWWP will provide a clear description of the drinking water system at the time of the application, and provide a framework to authorize future alterations (including extensions). |
| Permit to Take Water | Provides provincial approval for the manner in which the system takes water, and the amount it uses. | The Permit to Take Water helps to ensure the conservation, protection, wise use and management of the source waters of the province. |
| Financial Plan | Plans must include operating and capital financial projections and be approved by the owner. | Financial plans will help promote the financial sustainability of municipal drinking water systems across the province. |
| Operational Plan | It explains how the operating authority's quality management system meets the requirements outlined in the Ontario Drinking Water Quality Management Standard (DWQMS) by documenting policies, procedures and processes. | Implementing a quality management system for a municipal residential drinking water system can provide:<br>• Greater efficiency and effectiveness, which can minimize duplication<br>• Consistent policies and procedures communicated throughout the organization<br>• Improved management and operation to support the production of high quality drinking water. |
| Accreditation of the Operating Authority | Municipal owners must have their system operated by an accredited operating authority. In order to become accredited, an operating authority must have a quality management system, which includes the operational plan, evaluated by a third-party auditor against the DWQMS requirements. | This verifies that the owner and operating authority's quality management system meets the requirements of the DWQMS as verified by a third-party audit. |

**CHIEF'S PERSPECTIVE:**

The Municipal Drinking Water Licensing Program makes sense for municipal residential drinking water systems. It moves Ontario to a streamlined and integrated approach to municipal licensing, while also enabling a continuous improvement approach to drinking water system management.

**FIGURE 3:** Phased-In Licensing of Municipal Drinking Water Systems




It will start in the southwest part of the province, then move to the southeast, and then into the north. See **Figure 3:** Phased-In Licensing of Municipal Drinking Water Systems.

## Services to Accredit Operating Authorities

The ministry entered into an agreement with the Canadian General Standards Board (CGSB) to provide accreditation services under the Municipal Drinking Water Licensing Program. This agreement sets out requirements for the administration of the accreditation program.

CGSB is a revenue-neutral, arms-length organization of the Government of Canada, and a part of the Department of Public Works and Government Services. This federal-provincial partnership was strongly endorsed by municipal stakeholders through the ministry's Licensing Working Group.

## Guidance for System Owners, Operating Authorities and Other Stakeholders

Implementing the Licensing Program will require ongoing communication and partnership between the prov-

ince and stakeholders. The ministry has provided a number of resources that give clear guidance and support for each element of the Licensing Program, including:

- An *Overview Guide to the Municipal Drinking Water Licensing Program for Municipal Residential Drinking Water Systems (October 2007)* which provides detailed information for system owners and other stakeholders on all aspects of the transition to municipal licensing, and on the government's expectations and requirements with respect to the five key elements required for licensing.
- A guidance document on preparing financial plans, *Toward Financially Sustainable Drinking Water Systems and Wastewater Systems*.
- Tailored guidance documents and regular targeted updates on Drinking Water Ontario at **www.ontario.ca/drinkingwater**.
- Pocket guides, including plain language summaries, provided to participants of information workshops that were held across the province.

This information can be found on Drinking Water Ontario at **www.ontario.ca/drinkingwater**.

Significant work was conducted on Ontario's new municipal licensing process in 2007-08, which will help strengthen Ontario's drinking water safety net. It supports provincial efforts to achieve a consistent framework for drinking water system operations and enhances the strong protection measures that are already in place to protect Ontario's drinking water from source-to-tap.

> The journey since 2002....has been a long and sometimes challenging one but the drinking water profession, including owners, operating authorities, Ontario Water Works Association, Ontario Municipal Water Association and the Ministry should be proud of the steps taken. It's a model in which the rest of the country and the U.S. have an interest.
>
> The OWWA/OMWA Joint Executive Committee Report in Ontario Pipeline, Spring 2009.

**CHIEF'S PERSPECTIVE:**

The government has taken strong action to protect Ontario's most vulnerable citizens from exposure to lead in drinking water. By implementing and monitoring the province's Lead Action Plan, the ministry and its partners are making an important contribution to drinking water protection. The ministry will continue to support local efforts to address lead in drinking water.

# Lead in Drinking Water

The government continues to move forward on implementing a multifaceted Lead Action Plan that includes workable and practical regulations to provide solid protection for human health.

## What is the lead issue in Ontario?

When tests found elevated lead levels in drinking water samples from taps in a number of older homes in London in the spring of 2007, the Chief Drinking Water Inspector (CDWI) took swift action:

- Immediately deploying drinking water inspectors to re-test the water from these homes. When re-sampling confirmed the initial results, the ministry hired international experts to better understand the science behind the elevated results and assist the City of London to address this concern
- Contacting all owners of municipal residential drinking water systems, asking them to voluntarily sample their drinking water
- On May 23, 2007, the CDWI ordered 36 municipalities across the province to undertake precautionary testing of 20 homes likely to contain lead pipes—to get a snapshot of what was happening across the province and to determine if flushing was effective. Sixteen of the 36 municipalities found at least one result that exceeded the lead standard, even after flushing the taps.

In response to these findings and with input from the Advisory Council on Drinking Water Quality and Testing Standards, known as the Ontario Drinking Water Advisory Council (the Advisory Council) and the Chief Medical Officer of Health, the ministry announced a comprehensive Lead Action Plan less than two months after the first elevated lead results were found—in June 2007.

A drinking water inspector takes a drinking water sample from a kitchen faucet.

## Components of the Lead Action Plan

The Lead Action Plan is multi-faceted and **Table 2** provides a summary of its components.

**TABLE 2:** Components of Ontario's Lead Action Plan

| Components | Description |
|---|---|
| Sampling and Submission of Data | It is mandatory, through amendments to O. Reg.170/03, for municipalities to test tap water for lead twice a year at a specified number of homes, notify home and facility owners of the results from their taps, and provide advice specified by the Medical Officer of Health if elevated lead levels are found.<br><br>It is mandatory, under O. Reg. 243/07, for all schools and private schools, as well as day nurseries with plumbing installed before 1990, to test their drinking water for lead annually. It is also required that any of these facilities with plumbing installed before 1990 flush their plumbing daily, rather than the previous weekly standard.<br><br>All drinking water test results for lead must be submitted to the ministry. |
| Financial Plans | Municipalities must provide details relating to the costs of replacing lead service pipes in the financial plans they are currently developing under the province's new Financial Plans regulation (O. Reg. 453/07). |
| Corrosion Control | Owners of large municipal residential drinking water systems are required to prepare corrosion control plans for systems where lead is found to be an ongoing problem. |
| Financial Assistance for Filters | To reduce the potential health risk of lead in drinking water, the province provided $4.4 million for a special water filter fund, which is administered by municipalities. Under this initiative, low-income families that meet specified criteria are eligible for an annual grant of $100. The NSF International website has an up-to-date list of filters that meet the standards at **www.nsf.org/certified/dwtu**. |
| Best Practices | The ministry provides best practice advice to municipalities, such as on-bill financing, to help make lead line replacement more affordable for homeowners. |
| Education | The ministry encourages municipalities to conduct public education campaigns, such as inserts in water bill mailings. |
| Volunteers | Drinking water system owners must recruit volunteers who wish to have tap water in their homes and buildings tested for lead. |

# TAPPING IN

### Corrosion Control

Lead in drinking water is most likely to come from lead pipes and from old solder that was used to connect the pipes and plumbing fixtures. Homes that were built before the mid-1950s are more likely to have lead pipes and service lines that can contribute to the elevated lead concentrations in drinking water. Plumbing installed prior to 1990 is likely to contain lead solder. The Building Code was amended to prohibit solder containing more than 0.2 per cent lead as of January 1990.

Flushing the plumbing in older buildings has been shown to be an effective way to reduce the lead content in the water. (For information on flushing please go to **www.ontario.ca/drinkingwater**). Municipalities can also make their water less corrosive by modifying the drinking water treatment process and adopting corrosion control methods.

During 2007-08, the ministry worked in partnership with the Ontario Drinking Water Advisory Council on this issue. In June 2007, the Advisory Council provided final recommendations on corrosion control to the Minister, and posted a report of its findings on the Environmental Registry.

Under the amended O. Reg. 170/03, large municipal residential drinking water systems will be required to implement corrosion control measures where the test results from plumbing (tap) samples trigger the requirement based on specific criteria set out in the regulation.

Higher lead levels in two of three testing periods at more than 10 per cent of a municipality's sampling locations indicate that corrosion control is needed. The municipality must submit a corrosion control plan to the ministry. Before implementing this corrosion control plan, the owner may need to apply to the Director to amend the systems approval or drinking water licence.

Flushing a tap.

## 2007-08 Lead Test Results—Round 1 of Community Testing (O. Reg. 170/03)

There are two types of samples—plumbing and distribution. A plumbing sample is a drinking water sample from a tap in a home or a business, intended to test the quality of water in those pipes. A distribution sample is a drinking water sample taken directly from a drinking water system's distribution pipes (often from fire hydrants) or from plumbing. It is intended to test the quality of water from the drinking water distribution system. Priority is given to obtaining plumbing samples from locations where lead-containing pipes and other plumbing materials are either present or suspected. The samples must be taken in each of two specified periods during the year—cold water/winter sampling occurs between December 15 and April 15, while warm water/summer sampling occurs between June 15 and October 15.

In the first round of community testing, about 250 municipal and non-municipal residential drinking water systems were granted some level of relief from meeting the full regulatory testing requirements where full compliance was not feasible, as the system owners could not find enough volunteers to facilitate the tests. The ministry will continue to work with the local drinking water systems and the

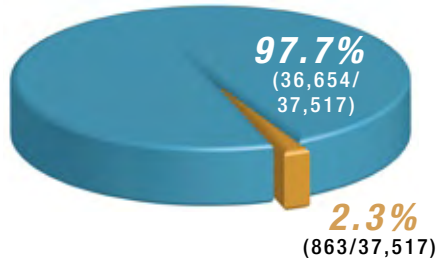
public to encourage greater voluntary participation in the community lead testing program.

For round 1 – the first (cold weather) round of municipal testing for lead in drinking water samples at taps between December 15, 2007 and April 15, 2008 – approximately 600 municipal and 400 non-municipal year-round residential systems took more than 37,000 plumbing and 5,000 distribution samples for lead testing. The provincial drinking water quality results from the lead testing were encouraging:

- 97.7 per cent, or 36,654 out of 37,517 plumbing sample test results taken throughout the province, met the Ontario Drinking Water Quality Standard for lead of 10 micrograms per litre (see **Chart 1**), and 97.7 per cent, or 5,019 out of 5,136, of distribution samples also met the standard (see **Chart 2**)
- 99.1 per cent of all plumbing samples from non-municipal year-round residential drinking water systems met the provincial standard for lead, and 99.6 per cent of the distribution samples met the standard
- The majority of drinking water systems throughout the province met the lead standard. There were no geographical trends in the systems where lead **exceedances** were detected.

The summary report on the results of round 1 of community testing for lead released on March 6, 2009 is available at Drinking Water Ontario (**www.ontario.ca/drinkingwater**). The next Chief Drinking Water Inspector's Annual Report will provide information on round 2 of community testing for lead, which ended on October 31, 2008. The testing results will be posted at Drinking Water Ontario (**www.ontario.ca/drinkingwater**) in early summer 2009.

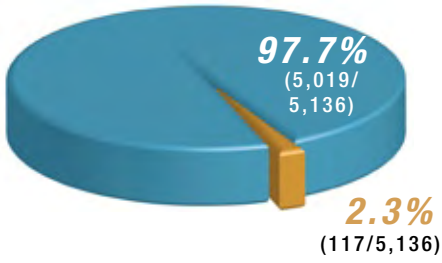
**CHART 1: Provincial Plumbing Results from Round 1 Community Testing**




Facilities with plumbing samples meeting standards

Facilities with plumbing samples not meeting standards

**CHART 2: Provincial Distribution Results from Round 1 Community Testing**




Facilities with distribution samples meeting standards

Facilities with distribution samples not meeting standards

## Lead Test Results in 2007 from Public/ Private Schools and Day Nurseries (O. Reg. 243/07)

Schools and day nurseries are required to take both a "standing" and "flushed' sample. The first "standing" sample is taken after the water system has not been in use for a period of six hours or more, usually overnight. The "flushed" sample is taken following a five-minute system flush and a 30-35 minute waiting period.

The initial mandatory drinking water tests for lead took place in private and public schools between June 15 and August 15, 2007. Drinking water in day nurseries was tested between June 7 and October 31, 2007. Ministry and local public health units followed up on results from facilities that exceeded the lead standard and worked with the affected facilities to make sure that appropriate remediation measures were taken.

The drinking water in 99 per cent of Ontario's public schools was sampled for lead, and 91 per cent of all the schools that submitted samples met the provincial standard for lead after the systems were flushed. The drinking water in about 44 per cent of Ontario's private schools was sampled for lead, and 95 per cent of the samples tested met the provincial standard. Across the province, 92 per cent of all day nurseries tested their drinking water for lead, and 97 per cent of the test samples from these facilities met the provincial drinking water standard for lead after their systems were flushed.

Overall, the 2007 results for lead testing under O. Reg. 243/07 indicated:

- A good response rate during the Lead Action Plan's first year. The ministry has implemented a plan to promote better compliance, including continuing education and outreach. The ministry also provided a guide, posters, webcasts and videos on flushing and testing for schools, private schools and day nurseries. Provincial Officers from the Ministry of the Environment in cooperation with the Ministry of Education, the Ministry of Health and Long-Term Care and Ministry of Children and Youth Services are also following up with those facilities that have not complied with O. Reg. 243/07
- Flushing works—the lead concentration was consistently lower in drinking water samples that were taken after the system had been flushed
- 94 per cent of the flushed samples taken at public schools, private schools and day nurseries met the province's 10 ug/L lead drinking water standard.

As **Chart 3** shows, 80 per cent of all facilities reported that all standing

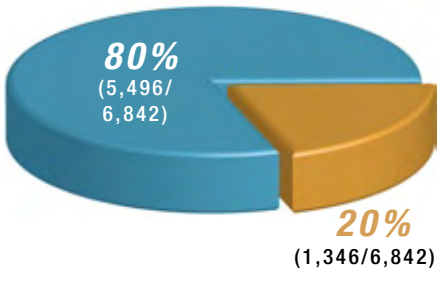
drinking water samples met the Ontario Drinking Water Quality Standard for lead. As **Chart 4** shows, this percentage increased significantly after the systems were flushed—94 per cent of all schools, private schools, and day nurseries met the standard for lead after flushing.

In September 2008, the ministry released a summary report on the 2007 lead testing in schools, private schools and day nurseries. The report is posted on the Drinking Water Ontario website (**www.ontario.ca/drinkingwater**). The second year of sampling was concluded on October 31, 2008 and the ministry is currently undertaking analysis of the almost 10,000 regulated facilities. These results will be posted at Drinking Water Ontario (**www.ontario.ca/drinkingwater**) in the summer of 2009 and will be reported in the next Chief Drinking Water Inspector's Annual Report.

## Continued Action

The Lead Action Plan is a good example of the effectiveness of Ontario's drinking water safety net. It also shows that, when problems with drinking water arise, the combination of notification, information sharing, health-based standards and

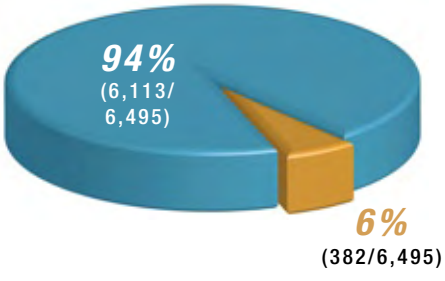
**CHART 3: Results from Public/Private Schools and Day Nurseries Submitting Standing Results in 2007**




Facilities with standing results meeting standards

Facilities with standing results not meeting standards

**CHART 4: Results from Public/Private Schools and Day Nurseries Submitting Flushed Results in 2007**




Facilities with flushed results meeting standards

Facilities with flushed results not meeting standards

compliance improvement actions work together to safeguard Ontario's drinking water.

In the coming months, work will continue in communities across Ontario to monitor and address any potential issues concerning lead in drinking water. At the same time, the ministry will continue to work closely with its municipal partners and other stakeholders to support these actions.

## New Approach to Regulating Small Drinking Water Systems

### What are small drinking water systems in Ontario?

Across Ontario, thousands of businesses and other premises supply drinking water to the public.

A small systems operator tests a drinking water sample for chlorine levels.

Many of these facilities do not obtain their drinking water from a municipal system. Under Ontario laws, most of these systems are classified as small drinking water systems.

There are five categories of drinking water systems that are specified as "small drinking water systems" under the Health Protection and Promotion Act and its regulations. For the most part, these small drinking water systems serve restaurants, seasonal trailer parks, seasonal campgrounds, community centres, libraries, motels, resorts and places of worship—along with other public facilities, such as municipally owned airports, industrial parks and sports and recreation facilities.

### Sharing oversight for the delivery of healthy drinking water

On December 1, 2008, responsibility for regulating Ontario's small drinking water systems, that do not serve a designated facility was transferred from the Ministry of the Environment to the Ministry of Health and Long-Term Care (please see **Tapping In Box** on page 7 for definition of facility types). Oversight of these small systems is now set out primarily in the Health Protection and Promotion Act and two new regulations made under that act, O. Reg. 318/08

(Transitional – Small Drinking Water Systems), and O. Reg. 319/08 (Small Drinking Water Systems).

Local boards of health are administering the new program—and that means small drinking water system owners and operators will soon be getting a call and a visit from their local public health inspector.

To implement the new regulatory approach, public health inspectors will conduct a site-specific risk assessment of small drinking water systems in the province. Based on these assessments, the inspectors will determine what owners and operators need to do to protect their drinking water, and a directive will be issued for each system. The directive will include requirements such as water testing, treatment where necessary, and operator training. The goal is to develop a customized approach to protecting drinking water for each small drinking water system, depending on the level of risk determined by the public health inspector's assessment.

Under the new regulatory arrangements, owners and operators of small drinking water systems still have the primary responsibility for protecting the drinking water they provide to the public. They are also responsible for meeting Ontario's regulatory requirements, including regular drinking water sampling and testing, and maintaining up-to-date drinking water sampling records.

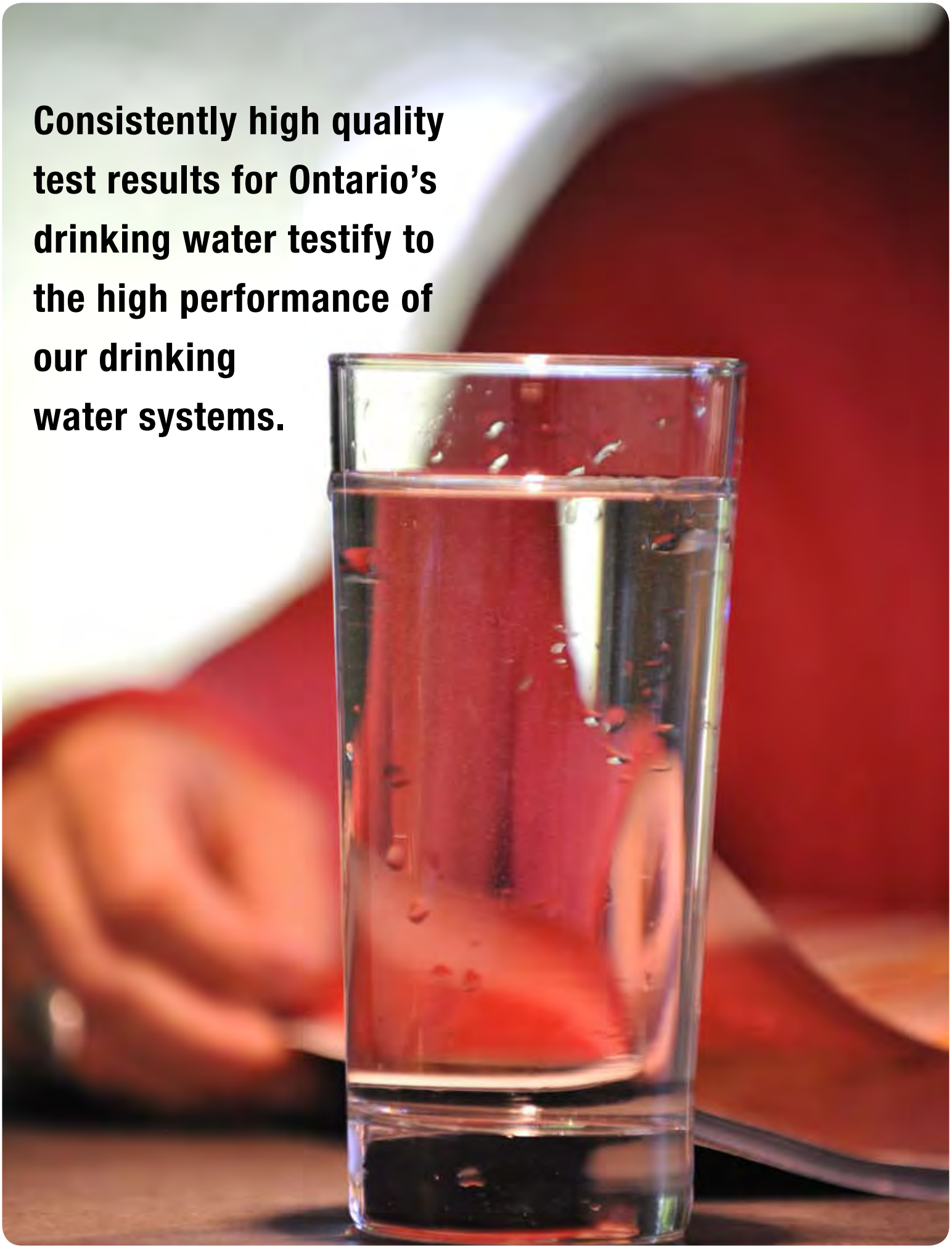
**CHIEF'S PERSPECTIVE:**

The recent transfer of an estimated 18,000 small drinking water systems to the Ministry of Health and Long-Term Care further strengthens the drinking water safety net through effective partnerships with provincial and local public health officials.

The new regulations identify a number of steps that must be taken to protect the safety of small drinking water systems, including:

- Protecting the drinking water at its source
- Monitoring the system regularly
- Maintaining the system properly
- Disinfecting the drinking water if laboratory results and an assessment show unacceptable levels of bacterial contamination
- Notifying the public whenever there is a problem.

More information about the new regulatory approach for small drinking water systems can be obtained by contacting the Safe Water Program Coordinator at the Ministry of Health and Long-Term Care at 416-327-7623, by contacting the nearest local public health unit or by visiting the Ministry of Health and Long-Term Care website at **www.health.gov.on.ca/drinkingwater**.


Consistently high quality test results for Ontario's drinking water testify to the high performance of our drinking water systems.

# Performance of Ontario's Drinking Water Systems

***The next two sections report on the performance of Ontario's drinking water systems. They summarize drinking water quality and inspection information and provide an assessment of the overall performance of these drinking water systems.***

## 2007-08 Drinking Water Quality Report

- **99.85 per cent of municipal residential drinking water systems tests met standards**
- **99.40 per cent of non-municipal year-round residential drinking water systems tests met standards**
- **99.39 per cent of drinking water systems serving designated facilities tests met standards**

## Introduction

Information is provided on the quality of the drinking water delivered in 2007-08 by three facility types:

- Municipal residential drinking water systems
- Non-municipal year-round residential drinking water systems
- The five other categories of drinking water systems that serve designated facilities.

Drinking water quality testing and other requirements for these system types are laid out in Ontario's Drinking Water Systems Regulation (O. Reg. 170/03). In 2007-08, test results on samples from these systems showed that Ontario's drinking water continues to be of high quality. These consistently high quality test results prove that Ontario's drinking water is among the best protected in the world.

**CHIEF'S PERSPECTIVE:**

The high quality of ongoing test results clearly demonstrates the benefits of the drinking water safeguards that have been put in place.

## Setting Drinking Water Standards

The Ontario Drinking Water Quality Standards (ODWQS) are listed in O. Reg. 169/03, which includes 158 health-related standards for microbiological, chemical and radiological parameters. Ontario's drinking water standards are based on Health Canada's Canadian Drinking Water Quality Guidelines (CDWQGs), which are developed by the Federal-Provincial-Territorial Committee on Drinking Water (CDW).

The existing CDWQGs are re-evaluated at least once every five years to determine whether any new information on health impacts or treatment technologies has become available.

After nationwide consultation has been completed by Health Canada and the CDW has approved the new guideline, Ontario carries out its own consultation, which begins with the Ontario Drinking Water Advisory Council (the Advisory Council). See **www.odwac.gov.on.ca**. The Advisory Council evaluates the guideline document and makes recommendations to the Minister of the Environment. The Advisory Council may propose that Ontario adopt a more stringent value than the CDWQG as an Ontario Drinking Water Quality Standard (ODWQS). The Minister uses this advice to decide whether to adopt the proposed CDWQG as a standard in Ontario, or whether an even more stringent ODWQS is needed. As extensive as the process is to evaluate the suitability of a CDWQG as an ODWQS, there is a final step – public consultation through the Environmental Bill of Rights Registry – where any Ontarian may make a submission on the standard for consideration by the ministry.

Laboratory technicians working at a licensed laboratory.

## Meeting Drinking Water Standards

During the 2007-08 fiscal year, more than 650,000 drinking water test results were submitted to the ministry by laboratories licensed to perform drinking water testing. Water quality tests determine if treated drinking water meet the Ontario Drinking Water Quality Standards. If a drinking water test result exceeds a standard listed in O. Reg. 169/03 appropriate action must be taken.

# TAPPING IN

## Getting the Levels Right—Drinking Water and Trihalomethanes (THMs)

Disinfection of drinking water has virtually eliminated most waterborne diseases caused by pathogens commonly found in water. Chlorine is the most common disinfectant. Maintaining a chlorine residual in the distribution system prevents bacteria from re-growing in the pipes while the drinking water is delivered to homes and businesses throughout the community. As a result, all drinking water systems in Ontario currently add chlorine to the water.

Trihalomethanes (THMs) are a group of compounds that may be formed as by-products during the disinfection of drinking water with chlorine. THMs are formed when the chlorine reacts with naturally occurring organic material such as decaying leaves, and can be found in treated drinking water. THMs are much more likely when the source water comes from a lake or a river as opposed to ground water. Because one of the THM compounds – chloroform – is a possible cancer-causing agent, the Ontario's Drinking Water Quality Standards (ODWQS) set the running annual average concentration of THMs at 100 micrograms per litre (µg/L).

Health Canada reviewed the Canadian Drinking Water Quality Guideline for THMs and reaffirmed the existing guideline of 100 µg/L. The Ontario Drinking Water Advisory Council has recommended reducing the ODWQS standard for THMs in drinking water to 80 µg/L. In the Advisory Council's view, this more stringent standard would promote better operational practices at drinking water treatment plants throughout the province, without compromising disinfection.

The most appropriate way to reduce THMs in drinking water is to remove as much of the naturally occurring organic material as possible prior to adding chlorine. However, removal after the chlorination process is another option available to system operators. Optimizing treatment plant processes can also result in reduced THM production and help reduce the systems' operating costs, by enabling them to use their existing equipment and treatment chemicals more efficiently.

During 2007-08, the ministry conducted a study and began developing new educational information for operators of smaller drinking water systems that will help them optimize their plants to meet the standards for THMs.


A chlorine analyzer used for testing chlorine levels.

**CHIEF'S PERSPECTIVE:**

During 2007-08, in more than 520,000 drinking water quality test results from municipal residential drinking water systems, 99.85 per cent of the results met Ontario's strict drinking water standards. The consistent high water quality indicated by these test results can reinforce the public's confidence in the quality of their municipal drinking water.

## Overview of Municipal Residential Drinking Water Systems Performance

In 2007-08, municipal residential drinking water systems used laboratories licensed to perform drinking water testing to analyze and submit a total of 527,732 microbiological, chemical and radiological test results on their behalf. Of these tests, 99.85 per cent met provincial standards. Overall, only 0.15 per cent of the test results exceeded the maximum allowable concentrations permitted by the Ontario Drinking Water Quality Standards, and **corrective action** was taken in all cases. **Table 3** outlines these encouraging test results over the past four years.

## Overview of Non-Municipal Year-Round Residential Systems' Performance

During 2007-08, non-municipal year-round residential drinking water systems registered with the ministry used laboratories licensed to perform drinking water testing to analyze and submit a total of 43,026 drinking water samples. The test results determined that 99.40 per cent of the samples met provincial standards—an identical result to the previous year. Only 0.60 per cent of the test results exceeded provincial drinking water quality standards, and corrective action was required to be taken immediately in each case. The overall test results for the past four years for this facility type are shown in **Table 3**.

The ministry has been undertaking proactive risk-based inspections of non-municipal year-round residential

**TABLE 3: Drinking Water Test Results for Drinking Water Systems**

| Facility Type | Percent of Drinking Water Tests Meeting Standards | | | |
|---|---|---|---|---|
| | 2007-08 | 2006-07 | 2005-06 | 2004-05 |
| Municipal Residential Drinking Water Systems | 99.85 | 99.83 | 99.84 | 99.74 |
| Non-Municipal Year-Round Residential Systems | 99.40 | 99.40 | 99.45 | 99.41 |
| Systems Serving Designated Facilities | 99.39 | 99.49 | 99.42 | 99.06 |

drinking water systems. The facilities are selected for inspection based on a number of considerations—including, but not limited to a history of adverse water quality incidents, a system's compliance history and referrals by the local public health unit.

**Table 4** lists the number of drinking water systems registered with the ministry and the number of systems that submitted drinking water tests for analysis by laboratories licensed to perform drinking water testing in 2007-08. An explanation of the difference in numbers is provided in the notations.

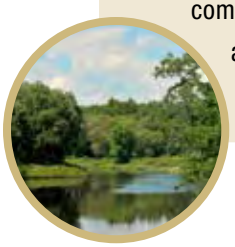
**TABLE 4: Number of Drinking Water Systems Registered with the Ministry and the Number of Systems Submitting Drinking Water Test Results for 2007-08**

| Facility Type | Number of Systems Registered | Number of Systems Submitting Drinking Water Test Results | Explanation for Difference Between Systems Registered and Systems Submitting Results |
|---|---|---|---|
| Municipal Residential Drinking Water Systems | 697 | 693 | Supplied Water*<br>System not operational** |
| Non-Municipal Year-Round Residential Systems | 488 | 421 | No samples were uploaded to the ministry and owners have been contacted to resolve the issue. |
| Systems Serving Designated Facilities | 1,631 | 1,382 | Cistern System*** or<br>No samples were uploaded to the ministry and owners have been contacted to resolve the issue. |

* Supplied Water – systems with agreements in place to have their water supplied by other municipal residential drinking water systems and these systems performed the sample collection and submission
** System registered with the ministry but was not operational for the majority of the fiscal period and therefore not required to sample and have test results submitted
*** Cistern System – systems that receive drinking water for their cistern from municipal residential drinking water systems that carry out the required sampling

**CHIEF'S PERSPECTIVE:**

Generally non-municipal year-round residential systems and systems serving designated facilities are compliant with regulatory requirements, with some exceptions. The Ministry of the Environment continues to work with the systems that aren't compliant to ensure that they undertake all necessary actions to meet their regulatory requirements.



The ministry continues to work with the owners and operators of these smaller systems to inform them about their regulatory responsibilities, encourage them to register their systems in the provincial drinking water database, and help them comply with the requirements of O. Reg. 170/03. The ministry also contacts systems that do not submit the required test results.

**TABLE 5: Number of Registered Systems Serving Different Types of Designated Facilities as of March 31, 2008**

| Primary Function of Systems Serving Designated Facilities | Number of Systems Serving Designated Facilities | |
|---|---|---|
| | 2007-08 | 2006-07 |
| School* | 630 | 637 |
| Social Care | 481 | 483 |
| Health Care | 114 | 116 |
| Children's Camp | 392 | 387 |
| Other | 14 | 10 |
| **Total** | **1,631** | **1,633** |

*Includes schools, private schools and universities and college facilities

## Overview of the Performance of Systems Serving Designated Facilities

During 2007-08, laboratories licensed to perform drinking water testing carried out a total of 84,973 tests on drinking water samples from systems that serve designated facilities, as required by the Safe Drinking Water Act. The test results showed that 99.39 per cent of the samples met the province's drinking water quality standards, compared to 99.49 per cent in 2006-07. **Table 3** shows the overall drinking water quality test results for systems serving designated facilities over the past four years.

As with non-municipal year-round residential systems, the ministry has been undertaking proactive inspections of systems serving designated facilities over the past several years. The ministry is following up with the systems' owners or operators to provide education and outreach and to ensure compliance with the province's sampling and reporting requirements. In addition to working with these systems to help them comply with O. Reg. 170/03, the ministry tracks and follows up with systems that do not submit test results. **Table 5** shows the number of drinking water systems serving various types of designated facilities.

# 2007-08 Drinking Water Test Results:

The 2007-08 drinking water quality test results from the three facility types are summarized in **Tables 6, 7 and 8**. These results – and the consistently high quality results that were found in 2004-05, 2005-06 and 2006-07 – confirm that these systems are delivering high quality drinking water.

The information presented in this section of the report summarizes the results of drinking water quality testing for three key types of parameters—microbiological, chemical and radiological. This part of the report also includes information about sodium and fluoride in drinking water, adverse water quality incident results and long-term Boil Water Advisories in 2007-08.

## Microbiological Test Results

### Testing for Microbiological Parameters

Some microbiological organisms are harmful to human health. Ontario regulations require microbiological tests of drinking water samples to detect the presence of total coli-

**DRINKING WATER FACTS:**

Consumers actually drink very little of our processed "drinking water"; around 1% of all treated water. The rest goes on lawns, in washing machines, and down toilets and drains!

**TABLE 6: Summary of Drinking Water Test Results for Municipal Residential Drinking Water Systems from April 1, 2007 to March 31, 2008**

| PERIOD | APRIL 01, 2007 to MARCH 31, 2008 | | | | |
|---|---|---|---|---|---|
| Parameter Name | # of Results | # of Exceedances | # of Drinking Water Systems with Exceedances | % Exceedance | % Meeting Standards |
| **MICROBIOLOGICAL** | | | | | |
| *E. coli* | 233,730 | 23 | 22 | 0.01 | 99.99 |
| Total Coliform | 234,380 | 434 | 199 | 0.19 | 99.81 |
| **MICROBIOLOGICAL TOTAL** | 468,110 | 457 | 199 | 0.10 | 99.90 |
| **CHEMICAL*** | 59,614 | 320 | 83 | 0.54 | 99.46 |
| **RADIOLOGICAL** | 8 | 0 | 0 | 0.00 | 100.00 |
| **TOTAL** | **527,732** | **777** | **255** | **0.15** | **99.85** |

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after December 15, 2007, are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.

Chemical analysis of drinking water.

forms and ***E. coli*** bacteria, because some strains of these organisms can cause serious health problems.

***Total Coliforms:*** Total coliforms are a group of closely related bacteria that live freely in the environment. Although not all coliforms are harmful to human health, their presence in drinking water usually indicates that the system may be vulnerable to contamination, or in rare cases, may be contaminated.

***Escherichia coli (E. coli) Bacteria:*** *E. coli* are common bacteria that are found in human and animal intestines and are naturally occurring in the environment. There are many different types, or strains, of *E. coli*—and while some strains benefit human health, others can cause serious health problems.

**TABLE 7: Summary of Drinking Water Test Results for Non-Municipal Year-Round Residential Systems from April 1, 2007 to March 31, 2008**

| PERIOD | APRIL 01, 2007 to MARCH 31, 2008 | | | | |
|---|---|---|---|---|---|
| Parameter Name | # of Results | # of Exceedances | # of Drinking Water Systems with Exceedances | % Exceedance | % Meeting Standards |
| **MICROBIOLOGICAL** | | | | | |
| *E. coli* | 17,367 | 16 | 13 | 0.09 | 99.91 |
| Total Coliform | 17,360 | 179 | 92 | 1.03 | 98.97 |
| **MICROBIOLOGICAL TOTAL** | 34,727 | 195 | 92 | 0.56 | 99.44 |
| **CHEMICAL*** | 8,299 | 63 | 22 | 0.76 | 99.24 |
| **RADIOLOGICAL** | 0 | 0 | 0 | NA | NA |
| **TOTAL** | **43,026** | **258** | **109** | **0.60** | **99.40** |

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after December 15, 2007, are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.

Because of the potential health hazard posed by some strains of *E. coli*, the Ontario Drinking Water Quality Standard for *E. coli* is zero—which means that it should not be detectable at all in drinking water samples. If any level of *E. coli* is detected in a drinking water sample, it is considered to be an adverse water quality incident.

## Provincial Microbiological Testing Results

***Municipal residential drinking water systems:*** In 2007-08, results from tests of municipal residential drinking water samples confirmed that Ontarians can be confident that their municipal residential drinking water systems are delivering high quality drinking water to their taps. During the year, 99.90 per cent of all microbiological water quality tests on municipal residential drinking water system samples met Ontario's legislated standards.

Of the **exceedances** reported by municipal residential drinking water systems in 2007-08, some 59 per cent of the exceedances were for microbiological parameters. In all, 199 municipal residential drinking water systems, 29 per cent of the 688 systems that had microbiological test results submitted by laboratories licensed to perform drinking water testing, had microbiological parameter exceedances in 2007-08. Of these, 94 systems had more than one microbiological exceedance.

**TABLE 8: Summary of Drinking Water Test Results for Systems Serving Designated Facilities from April 1, 2007 to March 31, 2008**

| PERIOD | APRIL 01, 2007 to MARCH 31, 2008 | | | | |
|---|---|---|---|---|---|
| Parameter Name | # of Results | # of Exceedances | # of Drinking Water Systems with Exceedances | % Exceedance | % Meeting Standards |
| **MICROBIOLOGICAL** | | | | | |
| *E. coli* | 29,250 | 18 | 18 | 0.06 | 99.94 |
| Total Coliform | 29,222 | 258 | 172 | 0.88 | 99.12 |
| **MICROBIOLOGICAL TOTAL** | 58,472 | 276 | 172 | 0.47 | 99.53 |
| **CHEMICAL*** | 26,501 | 242 | 69 | 0.91 | 99.09 |
| **RADIOLOGICAL** | 0 | 0 | 0 | NA | NA |
| **TOTAL** | **84,973** | **518** | **234** | **0.61** | **99.39** |

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after December 15, 2007, are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.

A laboratory technician using laboratory equipment.

**Table 9** summarizes the 2007-08 microbiological test results for municipal residential drinking water systems, non-municipal year-round residential systems and systems serving designated facilities.

***Non-municipal year-round residential drinking water systems:*** During 2007-08, more than 34,000 microbiological tests were carried out on drinking water samples from non-municipal year-round residential drinking water systems across the province. The test results found that 92 of these systems had a total of 195 microbiological **exceedances**—representing only 0.56 per cent of the total number of tests during the year. Overall, 99.44 per cent of the test results submitted by laboratories licensed to perform drinking water testing for this facility type met the provinces' stringent, health-based microbiological standards.

**TABLE 9: 2007-08 Microbiological Test Results**

| Facility Type | Parameter | # of Systems Submitting Results | # of Systems with Exceedances | # Results | # of Exceedances | % Meeting Standards |
|---|---|---|---|---|---|---|
| **Municipal Residential Drinking Water Systems** | *E. coli* | 688 | 22 | 233,730 | 23 | 99.99 |
| | Total Coliform | 688 | 199 | 234,380 | 434 | 99.81 |
| | Total Microbiological | 688 | 199 | 468,110 | 457 | 99.90 |
| **Non-Municipal Year-Round Residential Systems** | *E. coli* | 419 | 13 | 17,367 | 16 | 99.91 |
| | Total Coliform | 419 | 92 | 17,360 | 179 | 98.97 |
| | Total Microbiological | 419 | 92 | 34,727 | 195 | 99.44 |
| **Systems Serving Designated Facilities** | *E. coli* | 1,368 | 18 | 29,250 | 18 | 99.94 |
| | Total Coliform | 1,369 | 172 | 29,222 | 258 | 99.12 |
| | Total Microbiological | 1,369 | 172 | 58,472 | 276 | 99.53 |

Of all the exceedances reported by non-municipal year-round residential systems in 2007-08, some 76 per cent of the exceedances involved microbiological parameters. Overall, 92 of these systems – representing 22 per cent of the 419 systems that had microbiological test results submitted – reported microbiological exceedances during the year. Of these, 46 per cent (42 systems) reported more than one microbiological exceedance.

During the year, non-municipal year-round residential systems had 17,360 tests results for total coliforms submitted. The test results showed that 92 systems had a total of 179 exceedances for this parameter—representing 1.03 per cent of the samples. Overall, 98.97 per cent of the total coliform samples from these drinking water systems met the provinces' microbiological standards.

***Systems serving designated facilities:*** Drinking water systems serving designated facilities had a total of 58,472 microbiological test results submitted in 2007-08. In all, 172 of these systems reported a total of 276 microbiological exceedances. All told, 99.53 per cent of the microbiological tests carried out on drinking water samples from these systems met the province's rigorous, health-based drinking water quality standards.

## TAPPING IN

### A Bargain That's Good for Your Health

Since about two-thirds of the human body is water, water is absolutely essential to human health. Ounce for ounce, tap water is probably one of the best bargains available anywhere.

In addition, you can reap the financial and health benefits of Ontario's drinking water with confidence in its high quality. The ministry's drinking water safety net works, making Ontario's drinking water among the best protected in the world. Strong regulations, thorough training, and careful monitoring at drinking water treatment plants help make sure that you can rely on the quality of our drinking water.

Regulated drinking water systems routinely test their water with samples taken at the treatment plant and throughout the distribution system to make sure that these samples meet Ontario's rigorous drinking water quality standards.

Given the healthy benefits of drinking water – and the fact that 15,000 eight-ounce glasses of municipal tap water cost about the same as a six-pack of pop – high quality, reliable Ontario tap water might be the healthiest bargain on tap.

For more information on the benefits of drinking water, visit Drinking Water Ontario **www.ontario.ca/drinkingwater**.

Of all the exceedances reported by systems serving designated facilities in 2007-08, 53 per cent involved microbiological parameters. Only 172 of the 1,369 systems submitting results reported microbiological exceedances. Of these, 54 systems—representing 31 per cent (54 of 172) reported more than one microbiological exceedance.

**DRINKING WATER FACTS:**

The average person in Africa uses 3 litres of water per day. The average person in Canada uses about 340 litres of water per day.

## *E. coli* Test Results

***Municipal residential drinking water systems:*** During 2007-08, some 233,730 samples from 688 municipal residential drinking water systems were tested for ***E. coli***, and the test results showed only 23 **exceedances** at 22 systems. This represents a significant decrease over 2006-07, when *E. coli* bacteria were detected in 58 drinking water quality results from 233,134 samples tested.

In all, three per cent (22 of 688) of the municipal residential drinking water systems reported exceedances for *E. coli* bacteria in 2007-08 (see **Chart 5**), with one system reporting more than one exceedance. **Corrective action** was taken immediately in all cases—and after re-sampling, 22 of the 23 re-samples were clear of *E. coli* bacteria. The remaining case was resolved by further corrective action and re-samples were clear. This is further evidence that Ontario's drinking water safety net works effectively to reduce and manage any potential health risks that are detected in drinking water.

***Non-municipal year-round residential drinking water systems:*** During 2007-08, non-municipal year-round residential drinking water systems reported a total of 17,367 *E. coli* test results. Of these, 13 systems reported 16 microbiological exceedances involving *E. coli* bacteria. All told, 99.91 per cent of the samples from these systems met the province's drinking water quality standards for *E. coli*.

The 16 microbiological exceedances for *E. coli* bacteria represented 0.09 per cent of all tests for this parameter (16 of 17,367 test results). While

### *E. coli* Test Results

**CHART 5:** Municipal Residential Drinking Water Systems

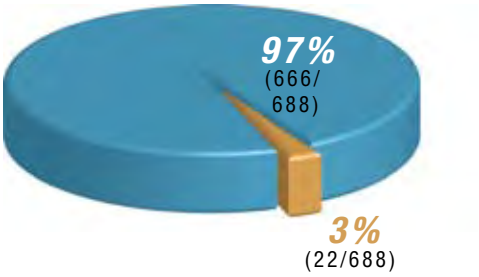



**CHART 6:** Non-Municipal Year-Round Residential Drinking Water Systems

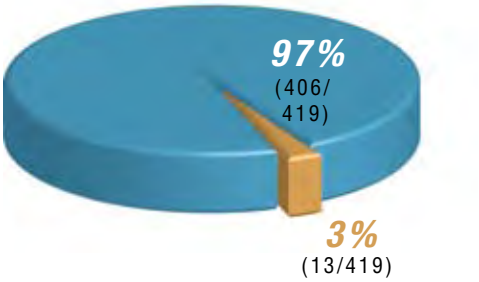
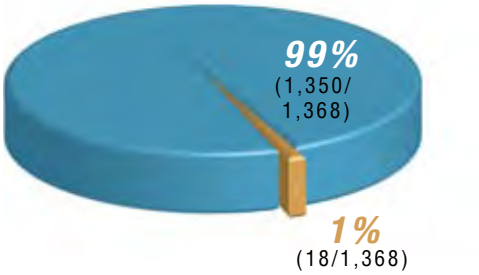



**CHART 7:** Drinking Water Systems Serving Designated Facilities




Drinking water systems that met *E.coli* standards in 2007-08

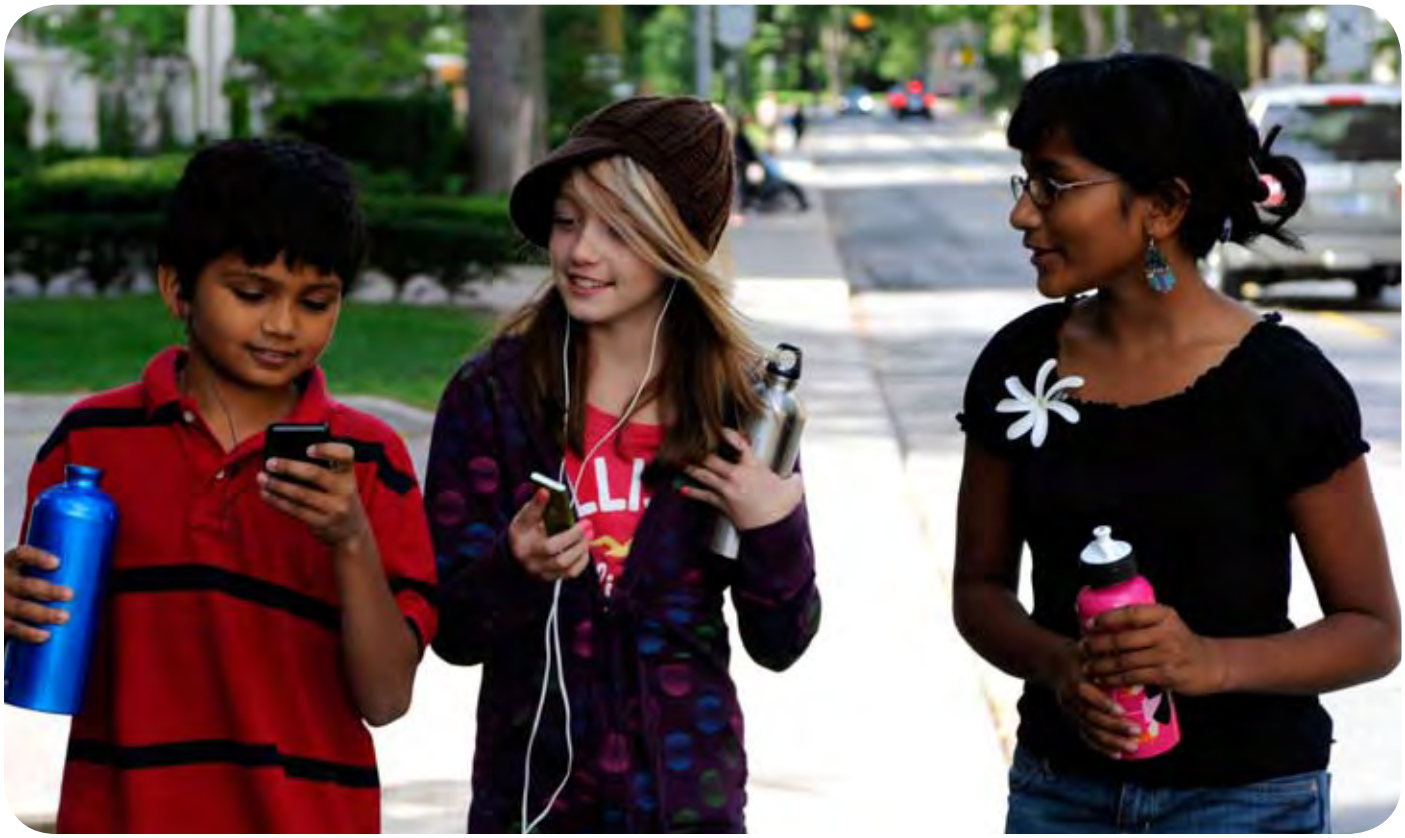
Drinking water systems with *E.coli* standard exceedances in 2007-08

only three per cent of these systems (13 of 419) reported *E. coli* bacteria exceedances, three of the 13 systems reported more than one exceedance (see **Chart 6**). On re-sampling, however, all of the samples were clear of *E. coli* bacteria.

***Systems serving designated facilities:*** Drinking water systems serving designated facilities used laboratories licensed to perform drinking water testing to analyze and submit a total of 29,250 test results for *E. coli* bacteria in 2007-08, and 18 systems had 18 test results that showed detectable levels of *E. coli* bacteria. This represents just 0.06 per cent of the total number of test results reported—which means that 99.94 per cent of the test results from systems serving designated facilities met the province's standards for *E. coli*. On re-sampling, all of the samples were clear of *E. coli* bacteria. Overall, only one per cent of these systems (18 of 1,368) had *E. coli* bacteria exceedances, and none of the 18 systems had more than one exceedance (see **Chart 7**).

In summary, whenever microbiological exceedances are detected in drinking water, **corrective action** is taken immediately. This is one of the reasons why Ontario consumers can be confident in the safety and quality of the drinking water provided by these systems.

**Charts 5, 6 and 7** summarize the 2007-08 test results for *E. coli* for each of the three facility types.



## Chemical Test Results

### Testing for Chemical Parameters

Drinking water samples from municipal residential drinking water systems, non-municipal year-round residential systems and systems serving designated facilities are tested regularly to help make sure that the drinking water these systems provide is safe to drink. The Drinking Water Testing Services Regulation, O. Reg. 248/03, sets out which tests must be done by a laboratory licensed to perform drinking water testing, and which tests can be carried out by an operator, through on-line monitoring, etc.

The frequency of chemical tests performed on drinking water vary according to the type of chemical, the category of drinking water system, the size of the population the system serves and the source of the water. **Appendix 5** of this report provides examples of health-related chemical quality standards for drinking water.

### Provincial Chemical Test Results

Ontario's Drinking Water Quality Standards (O. Reg. 169/03) protect Ontario consumers by establishing the maximum allowable concentration of chemicals that can be present in drinking water (see **Standard Setting** section). Regular chemical testing of drinking water samples is thus another important component of the drinking water safety net that protects the health of people in communities throughout the province. **Table 10** shows the chemical test results for three facility types.

### Chemical Test Results

**CHART 8:** Municipal Residential Drinking Water Systems

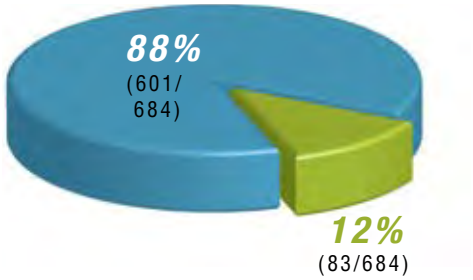



**CHART 9:** Non-Municipal Year-Round Residential Drinking Water Systems

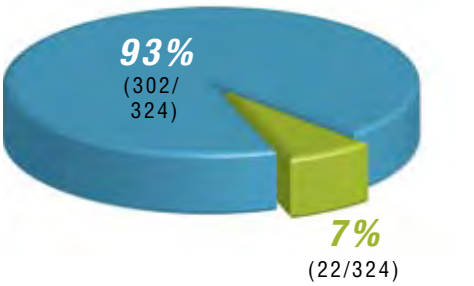
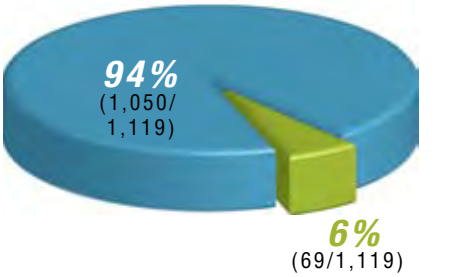



**CHART 10:** Drinking Water Systems Serving Designated Facilities




Drinking water systems that met chemical standards in 2007-08

Drinking water systems with chemical standard exceedances in 2007-08

**TABLE 10: 2007-08 Chemical Test Results**

| Facility Type | # of Systems Submitting Results | # of Systems with Exceedances | # Results | # of Exceedances | % Meeting Standards |
|---|---|---|---|---|---|
| Municipal Residential Drinking Water Systems | 684 | 83 | 59,614 | 320 | 99.46 |
| Non-Municipal Year-Round Residential Systems | 324 | 22 | 8,299 | 63 | 99.24 |
| Systems Serving Designated Facilities | 1,119 | 69 | 26,501 | 242 | 99.09 |

***Municipal residential drinking water systems:*** In 2007-08, a total of 684 municipal residential drinking water systems reported nearly 60,000 chemical test results, and 99.46 per cent of the test results met the province's quality standards. These systems reported a total of 320 chemical **exceedances**—representing 0.54 per cent of the test results. Chemical exceedances represented 41 per cent of all exceedances during the year for municipal residential drinking water systems.

Overall, 83 municipal residential systems, or 12 per cent, had test results that exceeded provincial standards for chemical parameters (see **Chart 8**). A total of 67 systems reported more than one chemical exceedance.

***Non-municipal year-round residential drinking water systems:*** During 2007-08, seven per cent of Ontario's non-municipal year-round residential drinking water systems reported chemical water quality test

**TABLE 11: Number of Chemical Standard Exceedances**

| Parameter | Number of Exceedances | | |
|---|---|---|---|
| | Municipal Residential Drinking Water Systems | Non-Municipal Year-Round Residential Systems | Systems Serving Designated Facilities |
| Arsenic | 0 | 0 | 2 |
| Barium | 1 | 0 | 5 |
| Benzene | 0 | 0 | 2 |
| Benzo[a]pyrene | 0 | 0 | 1 |
| Bromate | 3 | 0 | 0 |
| Fluoride | 84 | 29 | 28 |
| Lead* | 124 | 5 | 50 |
| Mercury | 1 | 0 | 1 |
| Nitrates (as Nitrogen) | 3 | 12 | 66 |
| Nitrogen; Nitrate + Nitrite | 3 | 12 | 86 |
| Selenium | 5 | 0 | 0 |
| Uranium | 1 | 3 | 1 |
| Trichloroethylene | 1 | 0 | 0 |
| Trihalomethanes** | 94 | 2 | 0 |
| **Chemical Total** | **320** | **63** | **242** |

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after this date are reported through the community lead testing results. Please see section on **Lead in Drinking Water.**

** Trihalomethanes are expressed as the running average of quarterly samples over one year.

results that exceeded the provincial standards. Of the 324 systems submitting samples, 22 systems had chemical exceedances (see **Chart 9**), and 18 systems had more than one chemical exceedance. Overall, 99.24 per cent of the chemical tests from this facility type met the health-based standards, with only 0.76 per cent of the tests results indicating exceedances.

A pump in a drinking water treatment plant.

***Systems serving designated facilities:*** During 2007-08, six per cent (69 of 1,119) of the systems serving designated facilities that reported test results had chemical exceedances, with 44 systems reporting more than one exceedance (see **Chart 10**). Only 242 chemical exceedances were reported from a total of 26,501 test results, and 99.09 per cent of the results from this facility type met the province's drinking water standards.

During the year, 47 per cent of all the exceedances reported by systems serving designated facilities involved chemical parameters. **Table 10** provides a summary of Chemical Test Results for Municipal Residential Drinking Water Systems, Non-Municipal Year-Round Residential Systems and Systems Serving Designated Facilities.

**Table 11** provides a breakdown of the number of chemical exceedances, by parameter, reported by the three facility types during 2007-08.

## Test Results for Radiological Parameters

### Testing for Radiological Parameters

Radiological testing may be required under a drinking water system's **Certificate of Approval** or by a **Provincial Officer's** or a **Director's Order**. In some parts of the province, there are naturally occurring deposits of ura-

nium, and drinking water testing is carried out periodically to determine the levels of radiological parameters in the water.

***Municipal residential drinking water systems:*** During 2007-08, eight municipal residential drinking water systems had a laboratory licensed to perform drinking water testing submit radiological test results, and found no exceedances for radiological parameters (see **Table 6**). No radiological tests were required in 2007-08 for drinking water from either non-municipal year-round residential drinking water systems or systems that serve designated facilities.

## Testing for Aesthetic Objectives

In addition to the health-based standards set out in Ontario's Drinking Water Quality Standards, the province has adopted operational aesthetic guidelines or objectives for drinking water—which set out desirable properties for such things as colour, odour, taste and **turbidity**. The objectives also cover chemicals such as sodium, iron and manganese.

## Adverse Water Quality Incidents

Swift, strong action on adverse water quality incidents (AWQI) is a critical element of the drinking water safety net. It is important to note that an AWQI does not in itself in-

# TAPPING IN

### Some Hard Truths about Soft Water

In some areas of Ontario, where drinking water systems rely on groundwater sources, high levels of dissolved calcium and magnesium make the water "hard." Hard water is generally not a health concern, but may cause lime build up in plumbing and may also cause irritated skin.

The most common treatment for hard water is to install a water softener that uses sodium as the softening agent. Adding sodium to the water helps reduce problems with pipes and clothing. Water softened with sodium is generally not suitable for human or animal consumption, and higher levels of sodium in drinking water can pose a health risk for people with certain medical conditions.

Ontario's aesthetic objective for sodium in drinking water is a maximum of 200 mg per litre. Provincial regulations require that sodium levels in drinking water of 20 mg per litre trigger notification of the local Medical Officer of Health and the ministry's Spills Action Centre.

The notification is required so that the Medical Officer of Health can tell physicians in the area about the high sodium content in the drinking water. The physicians can then advise their patients who require a sodium-restricted diet to limit their consumption of tap water.

Because of the potential health problems with sodium-softened water, the ministry recommends that anyone who installs a water softening system should also install a separate water line that bypasses the water softener, to provide water for cooking and drinking.

**CHIEF'S PERSPECTIVE:**

Responding to AWQIs at drinking water systems is an important element of the drinking water safety net. This ensures effective oversight, strict monitoring and prompt action in the event of an incident and effective oversight.

dicate unsafe water, but rather that an **exceedance** of a drinking water standard has occurred or an issue has arisen within a drinking water system. Under provincial regulations and the Safe Drinking Water Act, any drinking water sample test result that exceeds the prescribed Ontario Drinking Water Quality Standards is an adverse water quality incident, or AWQI, with certain exceptions.

Ontario's drinking water is among the best protected in the world. This protection includes stringent standards, extensive sampling requirements and strong regulatory oversight. As a result of over 500,000 samples collected annually at regulated systems, less than 0.5% result in an AWQI.

In the event that the adverse result is a result of a test conducted by a laboratory, the laboratory must notify the owner or operating authority of the system, the Ministry of the Environment's Spills Action Centre, and the local Medical Officer of Health.

When a drinking water system owner or operator is aware of an adverse test result – either through their testing observations or notification from a laboratory licensed to perform drinking water testing – they must notify the Ministry of the Environment's Spills Action Centre and the local Medical Officer of Health. This duplication of reporting is a key component of the drinking water safety net and helps make sure that all appropriate notifications are made and actions taken.

**Corrective actions** may include resampling immediately or as soon as reasonably possible, adjustment of the system or treatment process or notification to system users. In all instances, the owner must take any additional measures as directed by the local Medical Officer of Health, which could include the issuing of a Boil Water (BWA) or Drinking Water Advisory (DWA).

A BWA can be used when boiling the water will remove the **contaminant** to ensure the water is safe to drink. When a system is operating under a BWA notice, system users throughout the community are advised to boil or disinfect their drinking water before consuming it.

If the drinking water quality problem causing the AWQI cannot be addressed by boiling the water or by **disinfection**, the local Medical Officer of Health may direct that a DWA be issued. Under a DWA notice, the system's consumers are advised to use another source of drinking water until the DWA is lifted.

The process of issuing water advisories is designed to take effect any time there are the slightest concerns about the safety of drinking water - the system is all about precaution. In Ontario, we will always act quickly to safeguard public health.

Throughout this process, ministry inspectors and the local public health inspector work with the owner or operating authority to make sure

they understand their regulatory requirements, and that all required actions have been taken to resolve the issue.

### Provincial Adverse Water Quality Incidents Results

***Municipal residential drinking water systems:*** Between April 1, 2007 and March 31, 2008, a total of 427 municipal residential drinking water systems reported 1,768 AWQIs containing 2,030 results within the AWQIs. Microbiological exceedances accounted for 25.8 per cent of these results within AWQIs, while 20 per cent were chemical test results, 0.2 per cent were radiological test results[1] and 54 per cent were for other parameters. The "other" category includes high sodium, **turbidity**, low chlorine, high chlorine, low pressure, low ultraviolet voltage dosage and water main breaks.

***Non-municipal year-round residential drinking water systems:*** A total of 181 non-municipal year-round residential drinking water systems reported 456 AWQIs containing 537 results within the AWQIs in 2007-08. Systems in this facility type reported that 50.8 per cent of their results within AWQIs were related to microbiological test results, while 10.6 per cent were chemical test results, and 38.6 per cent were for other parameters.

***Systems serving designated facilities:*** During 2007-08, a total of 406 drinking water systems serving designated facilities reported 721 AWQIs containing 864 results within AWQIs—35 per cent of which were microbiological, 30.4 per cent of which were chemical, and 34.6 per cent of which were other test results.

Overall, the effective response provided by regulated systems to AWQIs during 2007-08 demonstrates that Ontario's drinking water safety net continues to work very well.

## TAPPING IN

### Long-Term Boil Water Advisories in 2007-08

Whenever an AWQI is reported, immediate corrective action must be taken to address the cause of the problem. A number of potential actions are available—ranging from re-sampling the drinking water and flushing the system's lines, to the local Medical Officer of Health issuing a Boil Water Advisory (BWA).

In some situations, if additional treatment equipment must be installed, a BWA or Drinking Water Advisory (DWA) may remain in place for longer periods. If a system has a BWA in place for 12 consecutive months it is considered to be under a Long-Term Boil Water Advisory.

As reported in last year's CDWI annual report, there were six municipal residential drinking water systems in Ontario that had ongoing BWAs or DWAs in place for 12 consecutive months, as of March 31, 2007. Since then, four of those drinking water systems have either been upgraded or replaced, and their advisories have been lifted.

As of March 31, 2008, a total of four municipal residential systems had an ongoing BWA or DWA in place for at least 12 consecutive months. One of these systems was new on the list, and its BWA notice has since been lifted. One system listed in the 2006-07 report recently had its BWA lifted. Two of the municipal residential systems listed with long term boil water advisories in the 2006-07 CDWI report still have the advisories in place, and therefore remain on the list while corrective actions are being undertaken.

[1]The test results were reported as AWQIs. The test results were not uploaded into the ministry's database at the time of publication and therefore not reported as exceedances. The ministry is working with the laboratory to have these results uploaded to the database.

**The ministry and our partners share a common commitment to excellence through continuous improvement.**

An Ontario drinking water inspector and a drinking water plant operator during a plant inspection.

# 2007-08 Drinking Water Inspection Report

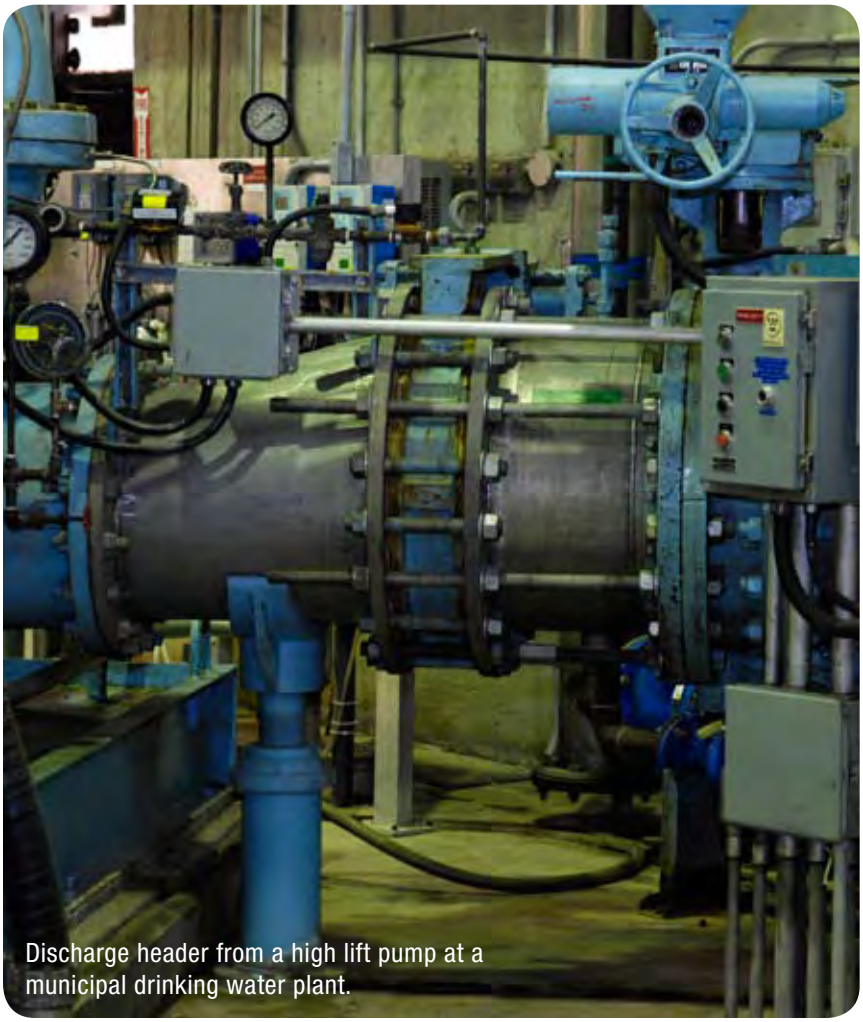
- All 697 of Ontario's municipal residential drinking water systems were inspected
- 95 percent of these systems received an inspection rating of over 90 per cent

***This section includes information on the ministry's 2007-08 inspection programs for both drinking water systems and laboratories licensed to perform drinking water testing, plus information highlighting the ministry's efforts over the past year to inform and educate the public and stakeholders.***

## Drinking Water System Inspection Program

This part of the annual report discusses the results of the ministry's inspection program for drinking water systems in 2007-08. The inspection program includes municipal residential and other regulated systems. Information is provided on the inspection ratings the ministry calculates for each municipal residential drinking water system in the province and also includes the main areas for improvement for these systems.

A summary of convictions and **Provincial Officer's Orders** issued during the 2007-08 year is also included in this section.



Discharge header from a high lift pump at a municipal drinking water plant.

## Assessing the Performance of Municipal Residential Drinking Water Systems

The ministry's annual inspection program is one of the most important factors in determining a drinking water system's performance. The ministry's rigorous, comprehensive inspection program is a key component of Ontario's drinking water safety net. The annual inspections are designed to determine how well each system is complying with the province's strict regulations

The Compliance and Enforcement Regulation (O. Reg. 242/05) requires that at least one out of every three municipal residential drinking water system inspections be unannounced. This requirement was met during 2007-08, with 37 per cent (259 of 699) of the municipal system inspections being unannounced. The ministry is also required by regulation to send an inspection report to municipal residential drinking water system owners or operating authorities within 45 days of the inspection—and this requirement was met in every case during the past year.


The ministry's formal inspection protocol for municipal residential drinking water systems in 2007-08 consisted of 156 regulatory questions arranged in 14 modules. Each question is risk assessed and contributes to the inspection rating. Administrative and best practice questions are also included in the protocol, but do not contribute to the rating.

There are two different types of inspections – detailed and focused. Before visiting the facility, the inspectors select those questions that are relevant to the municipal residential drinking water system they are about to inspect. They take a number of local factors into consideration when selecting the protocol questions – such as the drinking water source, the type of system being inspected and whether it is a focused or detailed inspection, in effect customizing the inspection for every system. Focused inspections can be carried out at municipal residential drinking water systems that have been fully inspected three times in a row and have been found to have no regulatory compliance deficiencies.

The ministry has developed a comprehensive, risk-based inspection rating process that provides a quantitative

measure of the drinking water systems' inspection results. **Appendix 1** provides detailed information on an enhanced methodology for calculating the risk ratings for municipal residential drinking water systems that took effect April 1, 2008.

## Municipal Residential Drinking Water System Inspection Program Results

In 2007-08 the ministry completed its planned annual inspection program of all 697 municipal residential drinking water systems in Ontario, which generated a total of 699 inspection ratings. One system was inspected twice in order to capture both its treatment works and distribution system while another received an inspection to make sure that equipment had been properly decommissioned.

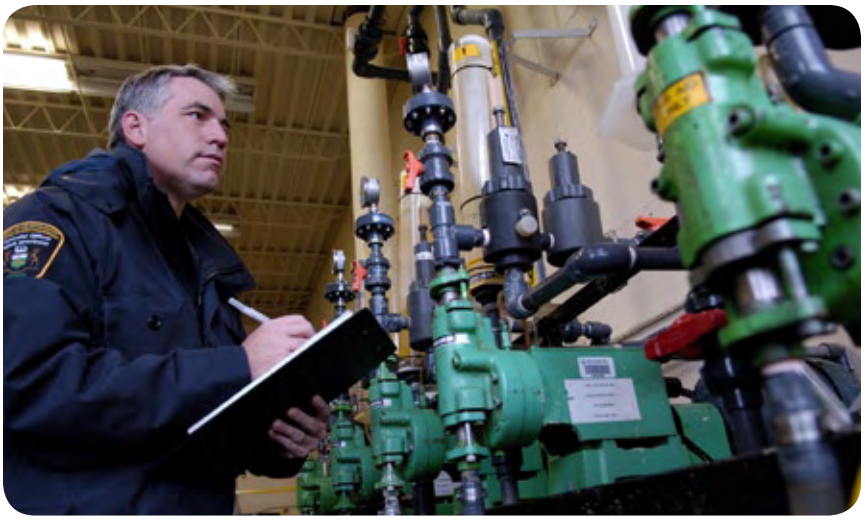
Of the 699 inspection ratings, 50 per cent were 100 per cent, which means that the inspectors found no areas of non-compliance with regulations. This is a 10 per cent improvement from 2006-07, when 40 per cent of inspection ratings achieved 100 per cent, and a 17 per cent increase from 2005-06, when 33 per cent of ratings were 100 per cent. Ninety-five per cent of the inspections achieved a rating of more than 90 per cent in 2007-08, compared to 92 per cent in the previous year, and 91 per cent the year before that.

A drinking water treatment plant operator takes a water sample.

The number of systems achieving 100 per cent has been increasing steadily over the past three years. These results are a strong indicator that the efforts by the ministry and its partners to promote continuous improvement are having a significant positive impact.

The results of the 2007-08 inspection program showed that of the inspection ratings in common with 2006-07, 44 per cent of the inspection ratings improved, while 28 per cent remained unchanged from the previous year, and 28 per cent received lower ratings than the year before.

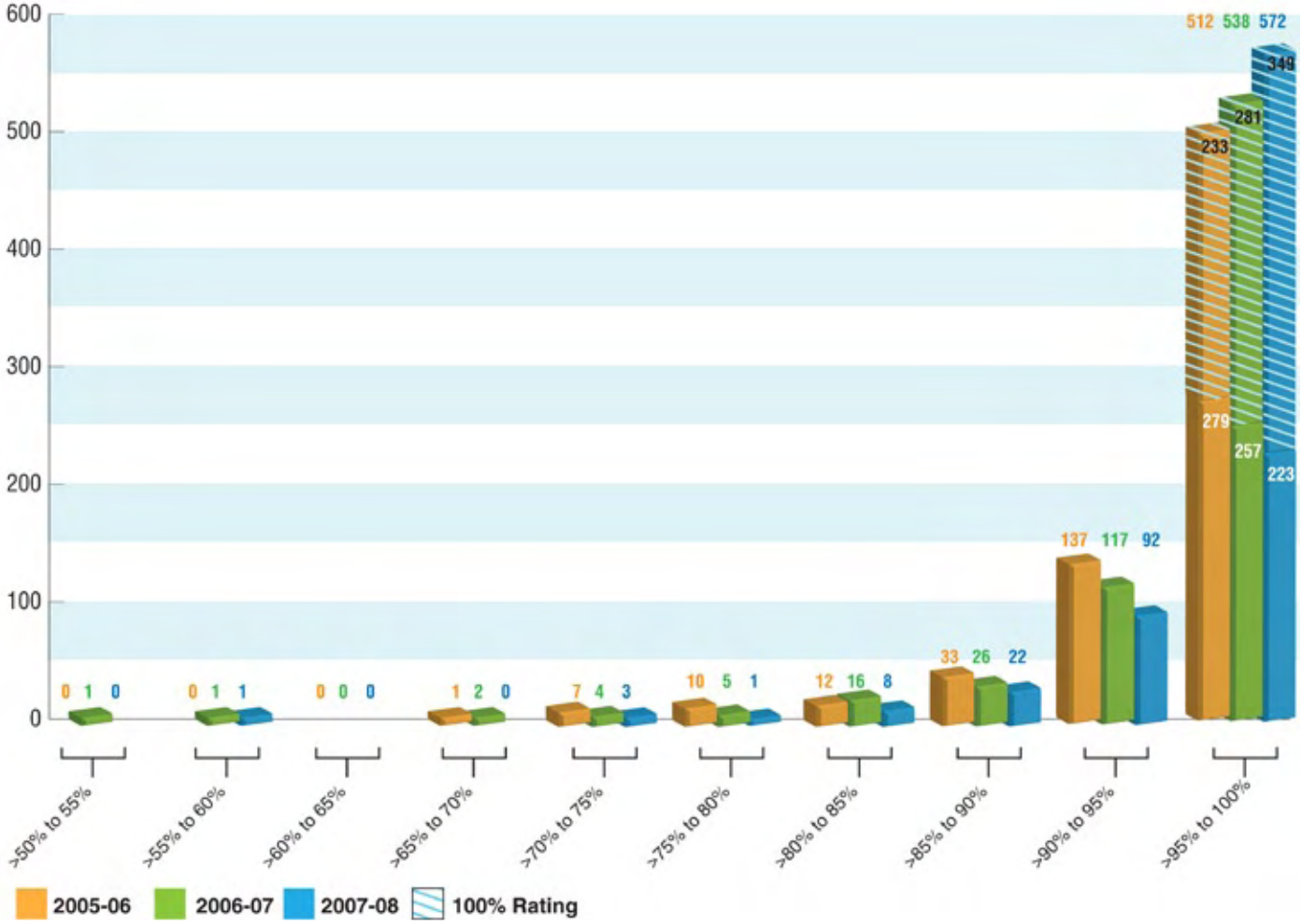
Whenever ministry inspectors find non-compliance issues, they use a range of compliance tools to help municipal system owners and operators resolve the compliance issues effec-



tively. **Chart 11** shows the distribution of inspection ratings for municipal residential drinking water systems over the past three years.

**Appendix 2** of this report provides a detailed table showing the location of municipal residential drinking water systems in Ontario, the name of the systems, their 2007-08 individual inspection rating and the percentage of their drinking water quality tests that met provincial standards.

**CHART 11: Distribution of Municipal Residential Drinking Water System Inspection Ratings in 2005-06, 2006-07 and 2007-08.**



## Municipal Residential Drinking Water Systems—Deficiencies, Orders and Orders Resolution

### Deficiencies

Under the Compliance and Enforcement Regulation (O. Reg. 242/05), the ministry is required to take action within 14 days if an inspection finds deficiencies at a municipal residential drinking water system. A deficiency is a violation of provisions of Section 18 of the Safe Drinking Water Act and certain provisions of its regulations, where the violation is deemed to pose a drinking water health hazard. If the deficiency represents an existing drinking water health hazard, mandatory action must be taken immediately.

During 2007-08, the ministry's inspection program found a total of four deficiencies at municipal residential drinking water systems. Mandatory abatement action was taken within 14 days either by the issuance of a **Provincial Officer's Order** or a referral to the Investigation and Enforcement Branch. By comparison, three deficiencies were found during municipal system inspections in 2006-07, while 14 deficiencies were found in 2005-06.

### Orders and Order Resolution

In 2007-08, the ministry completed a total of 699 inspections. There were a total of 14 contravention orders issued to 14 municipal residential drinking water systems. Eleven of

## TAPPING IN

### Ensuring Accountability — Meeting the Requirements of the Compliance and Enforcement Regulation

Under the Compliance and Enforcement Regulation (O. Reg. 242/05) the Ministry of the Environment is required to fulfill a number of specific responsibilities with respect to inspecting municipal residential drinking water systems and laboratories licensed to perform drinking water testing. During 2007-08, the Ministry of the Environment once again fulfilled its regulatory responsibilities.

**Municipal Residential Drinking Water Systems**
Actions included:

- Inspecting all 697 municipal residential drinking water systems in the province
- Sending inspection reports to appropriate authorities within 45 days of the completion of the inspection
- Ensuring that at least one of every three inspections was unannounced (in 2007-08 259 of 699* inspections were unannounced)
- Responding as required to adverse water quality test reports or other reported problems
- Taking mandatory action within 14 days of finding a deficiency at a municipal residential drinking water system (or taking immediate action in cases where a drinking water health hazard was present).

**Laboratories Licensed to Perform Drinking Water Testing**
Actions included:

- Inspecting all 56 licensed laboratories
- Completing 114 inspections at licensed laboratories while two inspections were completed at unlicensed laboratories. 53 of the laboratory inspections were unannounced, 56 were announced and five were responsive. (By regulation, at least one in two inspections must be unannounced.)
- Providing all laboratories with a inspection report within 45 days of the completion of the inspection
- Taking mandatory action within 14 days of finding an infraction at a licensed laboratory (or taking immediate action in cases where a drinking water health hazard was present).

**Request for Drinking Water Investigation**

The Compliance and Enforcement Regulation provides the public with the right to request an investigation of an alleged contravention of the Safe Drinking Water Act or any of its regulations or instruments. There were no applications from the public during 2007-08.

* See explanation of number of municipal residential drinking water systems, inspections and ratings on page 53.

these orders were issued as a result of inspections. Since the 14 orders were issued, 11 systems have complied with the requirements of the orders, while three systems continue to work towards complying with provincial regulations. No preventative orders were issued during the year.

**Table 12** shows the number of municipal residential drinking water systems that received orders, as a result of an inspection, from the ministry over the past four years. In this regard, it is worth noting that the number of orders issued in 2004-05 was 77, while only 11 orders were issued in 2007-08 – a solid indicator of the continuous progress being made by municipal systems across the province. See **Appendix 3-A-1** for details of contravention orders issued to municipal residential drinking water systems as a result of an inspection.

The ministry also issued three contravention orders to three municipal residential drinking water systems as a result of an incident involving the facility. See **Appendix 3-A-2** for details of these three contravention orders.

The ministry is in the fifth year of a program that focuses on drinking water systems from source-to-tap, and has been working with municipalities and other partners across the province to ensure compliance with the province's regulations. Through the continued efforts of the ministry's inspection staff, municipal system owners and operators have become more knowledgeable about meeting their regulatory obligations.

A number of ministry initiatives, including education and outreach and voluntary and mandatory compliance efforts, have helped to bring about a significant reduction in the overall levels of non-compliance. Higher compliance levels have also greatly reduced the number of Provincial Officer's Orders that have been issued.

Across the province, municipal residential drinking water system owners and operators are working hard to achieve the goal of 100 per cent compliance in all aspects of their operations and to ensure that they continue providing their customers and communities with safe, and high quality water. The ministry recognizes and appreciates these efforts—and the public benefits

**TABLE 12: Municipal Residential Drinking Water Systems (MRDWS) that Received Inspection Related Orders**

| | 2007-08 | 2006-07 | 2005-06 | 2004-05 |
|---|---|---|---|---|
| Total number of MRDWS with orders | 11 | 20* | 43** | 77 |
| Total number of inspections of MRDWS | 699 | 712 | 709 | 729 |
| Percentage of MRDWS that were inspected and received orders | 1.6 % | 2.8 % | 6.1 % | 10.6% |

* Four MRDWS were issued preventative orders in 2006-07
** 12 MRDWS were issued preventative orders in 2005-06

directly. These key drinking water partners can be proud of the tremendous progress they have made over the past several years.

### Local Services Boards

Some communities in Northern Ontario do not have a formal municipal structure and are managed by a Local Services Board. Such boards are defined and governed by the Northern Services Board Act, which is administered by the Minister of Northern Development and Mines.

A Local Services Board can be established by a group of 10 or more residents who must be Canadian citizens and over the age of 18. Drinking water systems that are operated by Local Services Boards are categorized as non-municipal year-round residential drinking water systems under O. Reg. 170/03.

### Local Services Boards Orders and Orders Resolution

During 2007-08, the ministry performed nine inspections of drinking water systems operated by Local Services Boards (LSBs). Following the inspections, the ministry issued three orders to three of the LSB systems. Since the orders were issued, all of the systems operated by LSBs have complied with their orders.

With respect to the four orders issued to LSBs in 2006-07, one of the boards is still working toward compliance. The same Local Services Board also received a Provincial Officer's Order during the 2005-06 inspection year. This Local Services Board recently received funding to install drinking water **disinfection** equipment. The ministry is continuing to work with the LSB to make sure that all disinfection requirements are met. See **Appendix 3-B** for details on contravention orders issued to Local Services Boards.

# Inspection Results for Non-Municipal Year-Round Residential Drinking Water Systems and Systems Serving Designated Facilities

**Key Facts in 2007-08:**

- **The ministry undertook 196 inspections of non-municipal year-round residential drinking water systems and systems serving designated facilities in 2007-08.**
- **These inspections resulted in the issuance of 53 orders.**

Ministry inspectors have been conducting proactive risk based inspections of non-municipal year-round residential drinking water systems and systems serving designated facilities for several years. The criteria for selecting these smaller systems for an inspection include a number of considerations, such as a history of adverse water quality incidents, compliance history and referrals by the local public health unit.

During 2007-08, ministry inspectors carried out a total of 196 inspections of drinking water systems in these two facility types – 112 systems that serve designated facilities, and 84 non-municipal year-round residential systems. As a result of these inspections, the ministry issued a total of 53 orders to 43 systems – 37 orders to 27 non-municipal year-round residential drinking water systems, and 16 orders to 16 systems serving designated facilities.

This is an increase compared to the two previous years. In 2006-07, for example, 44 orders were issued to systems in these two facility types, while 40 orders were issued to these types of systems in 2005-06. The increased number of orders links directly to the ministry targeting those systems that are of higher risk.

## Areas for Improvement—Regulated Drinking Water Systems

After the ministry completes its annual inspection program for regulated drinking water systems, the inspection results are carefully analyzed for trends in non-compliance. Based on this analysis, the ministry's inspectors gain a better understanding of the regulatory compliance areas that may require greater emphasis to help drinking water systems continuously improve.

This section of the report describes several of these compliance areas identified in previous annual reports. The ministry will continue to work on these areas for improvement with its partners and build the information from the compliance trend analysis into drinking water system operator training programs.

***Certificate of Approval Compliance***—During 2007-08, the ministry's inspectors found numerous violations arising because equipment sizes did not match those contained in the **Certificate of Approval** (e.g., tank sizes, generation set capacity, pump capacity ratings, etc.). Other non-compliance findings were either the result of not installing equipment, or having equipment that was installed but not operational at the time of the inspection. Ministry staff continue to work with municipalities to make sure that system upgrades are completed in a timely manner, and that new equipment is installed and operating correctly.

***Physical/Chemical Water Quality Sampling***—A number of systems have not monitored the physical/chemical water quality in accordance with the Drinking Water Systems Regulation (O. Reg. 170/03) or the system's Certificate of Approval. Numerous compliance violations in this area are related to collecting samples at the wrong times – typically for nitrates/nitrites and THMs – while others were caused because some drinking water systems did not sample for all required parameters.

***Operations and Maintenance Manual Compliance***—A number of system's operations and maintenance manuals did not meet the requirements of their Certificate of Approval. In 2007-08, the most common issues identified in this area related to process drawings that did not match the processes used at the facility, or to supporting documents that were mentioned in the facility's manual, but were not readily available to operators of the system at the time of the inspection.

***Flow Rate Exceedance***—In 2007-08, there were a number of drinking water systems whose flow rate exceeded the capacity permitted by their Certificate of Approval. While drinking water systems are allowed to exceed their approved flow rate for fire fighting and maintenance purposes, ministry inspectors found that a number of systems pumped more than their allowed capacity during 2007-08, usually in the summer. A number of systems also shut down some of their wells and pump houses to perform maintenance. This led to increased pumping from other locations, which is not an acceptable practice under provincial regulations.

**CHIEF'S PERSPECTIVE:**

Some non-municipal year-round residential drinking water systems and systems serving designated facilities continue to experience non-compliance issues. The ministry is leading a series of compliance activities working with these systems to bring them into compliance.

# TAPPING IN

## Ministry Works with Mennonite Schools to Keep Drinking Water Safe

Most Ontario Mennonites live in the Kitchener-Waterloo area throughout Waterloo Region, Wellington, Perth and Renfrew counties. To serve the educational needs of children in these small communities, the Markham Waterloo Mennonite Conference and the Old Order Mennonite Church operate 48 schools.

Under the Safe Drinking Water Act and its regulations, the schools' drinking water systems serve designated facilities and are thus required to meet the requirements of the Drinking Water Systems Regulation (O.Reg. 170/03). The ministry has been working with the schools' owners and operators to bring the Mennonite schools' drinking water systems into compliance with O. Reg. 170/03.

In 2008, some Mennonite schools planned to disconnect their taps from their drinking water systems. Seven local public health units, the Ministry of Health and Long-Term Care and the ministry determined that drinking water should be available in every school in the province, since it is a basic need and essential to children's well being.

To bring the schools into compliance, individual site visits and assessments by ministry inspectors and public health officials were planned, with the ministry providing hands-on assistance wherever possible, and considering regulatory relief wherever appropriate.

Mennonite representatives agreed to conduct regular bacterial testing of their schools' drinking water systems and committed to taking additional measures to protect the children's health where necessary, by drilling new wells, connecting to alternative drinking water supplies or providing treatment. The ministry provided assistance in completing registration forms for drinking water systems at unregistered schools, and to correct any inaccuracies from earlier attempts at registration.

Site assessments focused on drinking water systems that were most vulnerable. All but two of the systems at these schools have now been replaced by new drilled wells or alternative drinking water sources. The two remaining schools have provided hand washing stations and alternative water for their students, and are looking at providing new drilled wells or alternative drinking water supplies in the spring of 2009.

Five Mennonite schools installed state-of-the-art ultra-violet irradiation treatment devices and several other schools are now considering the installation of similar systems. The site assessments and reports for all 48 Mennonite schools were completed in February 2009.

# 2007-08 Licensed Laboratory Inspection Program

**Key Facts in 2007-08:**

- **There were 53 unannounced inspections, 56 announced inspections and five responsive inspections at the 56 laboratories licensed to perform drinking water testing.**
- **Three orders were issued to three laboratories licensed to perform drinking water testing, and all laboratories have since complied with the orders.**

This section of the annual report provides information on the 2007-08 results of the ministry's inspection program of laboratories licensed to perform drinking water testing. Twice-yearly laboratory inspections – like annual municipal residential drinking water system inspections – are a key component of Ontario's drinking water safety net.

Laboratory inspections are designed to confirm that laboratories licensed to perform drinking water testing are operating in compliance with provincial regulations. At the same time, the inspection program helps to ensure that immediate action is taken to correct any regulatory compliance issues the ministry's inspectors identify.

During 2007-08, Ontario's laboratories licensed to perform drinking water testing analyzed more than half a million drinking water samples from municipal residential drinking water systems alone. Samples are tested for a total of 158 health-related microbiological, chemical and radiological parameters which have associated Ontario Drinking Water Standards. They are also tested for specific aesthetic qualities.

In an announced inspection, the laboratory inspector schedules an on-site visit in advance with the laboratory. In an unannounced inspection, the inspector gives the laboratory up to 24 hours notice before arriving at the facility to conduct the inspection. Laboratories licensed to perform drinking water testing may also receive a third type of inspection – called a responsive inspection – where the inspector arrives unannounced to conduct an inspection based on a complaint or concern raised by a ministry staff member or an external source.

The inspection of a laboratory licensed to perform drinking water testing may include an assessment of several areas, including: accreditation requirements, facilities and resources, testing methodologies, the laboratory's adverse notification and reporting requirements, management practices,

An Ontario drinking water laboratory inspector and laboratory technicians during a licensed laboratory inspection.

adoption of best laboratory management practices, records management and data retention and sample handling and reporting.

During an inspection, the laboratory inspector may interview the laboratory personnel, review records, tour the facility, collect samples, take photographs and copy documents. The inspector may also request the laboratory to analyze proficiency testing samples, and provide the ministry with timely results from these samples as part of the inspection.

Ministry inspectors also inspected two laboratories not licensed to perform drinking water testing during the year, and these inspections fall under several categories. For example, the inspectors will conduct a pre-licensing inspection for Ontario drinking water laboratories that have applied for a drinking water testing licence with the mandatory condition that they are accredited.

Laboratories outside the province wishing to perform testing of Ontario drinking water must also apply to the ministry and may be inspected before being placed on the Director's eligibility list. In addition, laboratory inspectors may perform responsive inspections on laboratories not licensed to perform drinking water testing or companies, to ensure these organizations are not performing drinking water analysis without an appropriate licence. The laboratory inspectors inspect laboratories not licensed to perform drinking water testing and other facilities that apply for a licence using the same criteria they use for licensed laboratories, to ensure compliance with Ontario's drinking water legislation.

As with inspections for municipal residential drinking water systems, laboratory inspectors use a formal protocol to assess the regulatory performance of laboratories licensed to perform drinking water testing. The laboratories must obtain accreditation from a designated accreditation body to be permitted to perform specific types of tests. And because each laboratory specializes in certain kinds of tests, the ministry's inspectors tailor the

inspection to focus on their regulatory requirements along with other activities (i.e., test procedures that each laboratory actually carries out, laboratory management and standard operating procedures).

Under the Compliance and Enforcement Regulation, the ministry is required to provide the laboratory with an inspection report within 45 days of the inspection. The report must identify any problem areas and non-compliance issues that were found and provide guidance on how those areas and issues are to be addressed (see **Tapping In: Ensuring Accountability** on page 55).

Mandatory action must be taken within 14 days to address the problem if the inspector identifies a regulatory infraction. The mandatory action must be taken immediately if the infraction represents a drinking water-related health hazard.

Provincial regulations also require the licensed and outside-Ontario eligible testing laboratories to submit all their drinking water test results electronically to the ministry's Drinking Water Information System. This large database provides a comprehensive record of all the tests performed on drinking water system samples from across the province. The ministry analyzes the data to identify trends in drinking water quality, and to get an overall picture of how regulated drinking water systems have performed over time.

## Licensed Laboratory Inspection Summary

The 2007-08 laboratory inspection program found that laboratories licensed to perform drinking water testing met the majority of the regulatory requirements. There were 56 laboratories licensed to perform drinking water testing registered with the ministry in 2007-08, and the ministry completed a total of 114 inspections of these facilities during the year. All told, 53 of these inspections were unannounced, while 56 were announced and five were responsive in nature. The ministry also carried out two inspections of unlicensed testing facilities in 2007-08. **Table 13** provides a summary of the laboratory inspections completed over the past four years, broken down by the type of inspection.

**TABLE 13:** Summary of Laboratory Inspections

| Inspection Type | Licensed Laboratory Inspections Completed | | | |
|---|---|---|---|---|
| | 2007-08 | 2006-07 | 2005-06 | 2004-05 |
| Announced | 56 | 59 | 1 | 57 |
| Unannounced | 53 | 57 | 113 | 60 |
| Issue resolution* Announced | 2 | - | 5 | 5 |
| Responsive | 5 | 10 | 15 | 14 |
| **Total** | 116 | 126 | 134 | 136 |

* Inspections performed at unlicensed testing facilities

# TAPPING IN

### Laboratory Inspection Program Update Project (LIPUP)

During 2007-08, the ministry began a comprehensive review of the ministry's laboratory inspection program and how it relates to laboratory licensing. The review was designed to accomplish a number of goals, including:

- Reviewing and updating the ministry's laboratory inspection protocol
- Providing guidance and detailed operating procedures to inspectors
- Creating more consistent approaches to compliance and stakeholder relations across the province
- Enhancing the functionality of the Laboratory and Waterworks Inspection System, one of the ministry's main databases for storing inspection information
- Creating a modern, effective and flexible training program for laboratory inspectors
- Enhancing overall operational effectiveness
- Developing and implementing a laboratory licence renewal process for drinking water testing licences that have expired.

A multi-jurisdictional scan of best practices in drinking water protection during the year was completed and determined that Ontario is best in class in terms of accreditation, inspections and licensing of drinking water laboratories. Ontario has the first and only mandated laboratory licensing and inspection program and many other jurisdictions are now moving to follow Ontario's lead, by requiring drinking water testing laboratories to be accredited and licensed (visit **www.ontario.ca/drinkingwater** for more information on the licensing program).

The ministry has also established a successful long-term agreement with two key accreditation bodies—the Standards Council of Canada and the Canadian Association for Laboratory Accreditation.

The ministry's review included examining Ontario's existing laboratory inspection program and developing new protocols and laboratory inspection questions that parallel those used during inspections of regulated drinking water systems. The review also evaluated the application of focused laboratory inspections, as well as the regulatory inspection question risk-rating model used on municipal residential drinking water systems (see **Appendix 1**).

The ministry has consolidated the recommended improvements into an updated program, with revised inspection protocol questions and standardized guidance for its laboratory inspectors effective April 1, 2009.

During the ministry's 2007-08 inspection program, three laboratories voluntarily withdrew from the provincial licensing program in the period between their announced and unannounced inspections.

## Licensed Laboratory Orders

During 2007-08, ministry inspectors issued a total of three orders to three laboratories licensed to perform drinking water testing. In all cases, the laboratories complied with their orders. (See **Appendix 3-C** for details on orders issued to licensed laboratories.)

## Licensed Laboratories—Areas for Improvement

As with inspections of regulated drinking water systems, the ministry analyzes the results of its licensed laboratory inspection program to identify common areas where regulatory improvement is needed. Using this information, the ministry's inspectors can better target their laboratory inspections, and also help the laboratories achieve the goal of continuous improvement through increased compliance with provincial regulations.

The ministry's licensed laboratory inspection results did identify some common areas where administrative and other procedures need to be improved.

One of the most common problem areas involved record keeping. For example, laboratories are required to retain records that confirm they have provided a drinking water system owner and operator with sample-handling and transportation directives, and the ministry's inspectors found that this was not always the case in 2007-08. Some laboratories also failed to have an acceptable policy for handling test results.

Training of laboratory staff was another area for improvement that was identified in the 2007-08 inspection program. For example, some laboratories did not train their staff on procedures for validating drinking water data after they had modified their internal computer systems used to upload data to the ministry. In addition, some laboratories did not maintain the required training records to demonstrate that the appropriate analysts had been trained to follow the laboratories' policy for calculating results.

## TAPPING IN

### Only Laboratories Licensed to Perform Drinking Water Testing Can Test Your Water

Because drinking water is vital to public health, the ministry strictly regulates how it is tested. Under the provisions of the Safe Drinking Water Act, and the Health Protection and Promotion Act, only fully accredited laboratories that are licensed by the Ministry of the Environment may perform health-based drinking water tests.

During 2008-09, unsolicited door-to-door representatives are offering to perform drinking water tests on tap water in Halton, Peel, Toronto and other communities. In some cases, the companies leave behind vials, asking homeowners to fill them with tap water so that the samples can be collected later for testing.

Consumers should be aware that testing performed by these representatives is only permitted for parameters such as hardness or some other aesthetic quality of the drinking water found in a home's plumbing. If you do find that they are testing and/or reporting results for any health-related testing related to the quality of water in the drinking water systems serving the home (i.e., *E. coli*, total coliform or other parameters listed in O. Reg. 169/03), you should immediately contact the Ministry of the Environment, your municipality or your local public health unit. If you suspect fraud, you may also contact your local police or the Consumer Protection Branch of the Ontario Ministry of Small Business and Consumer Services at (416) 326-8800 in Toronto, or 1-800-889-9768 toll-free.

If a company is not compliant with Ontario's legislative and regulatory requirements, a ministry inspector could issue a Provincial Officer's Order requiring the company to stop performing tests, and/or refer the matter to the ministry's Investigations and Enforcement Branch.

### CHIEF'S PERSPECTIVE:

The 2007-08 laboratory inspection program found that laboratories licensed to perform drinking water testing met the majority of the regulatory requirements. The ministry continues to work with the licensed laboratory community to address the mainly administrative non-compliance issues identified during the year.

**CHIEF'S PERSPECTIVE:**

The ministry continues to work with its drinking water partners to overcome areas of non-compliance. In the meantime, drinking water consumers can be confident that, when potential violations occur, action is taken which could include pursuing the matter through the court system.

## 2007-08 Convictions

Under Ontario law, those who are responsible for delivering safe drinking water to the public are accountable for their actions. The ministry's Investigation and Enforcement Branch (IEB) is responsible for investigating potential violations of Ontario's environmental protection laws, including the Safe Drinking Water Act and its regulations.

Moreover, the ministry's investigators must conduct their business fairly and impartially, since they are gathering what could become legal evidence used to prosecute people or businesses in the courts. Convictions could involve fines, prison sentences, or both.

An Ontario drinking water inspector and drinking water plant operators during a plant inspection.

The process from investigation to prosecution involves several steps:

- The ministry's drinking water inspector files an incident report and refers the alleged drinking water violation to IEB
- IEB reviews the inspector's report and, if necessary, begins an investigation (an investigation involves interviewing witnesses and taking formal statements – sometimes requiring **cautioned statements** from people who may face charges – and acquiring search warrants or other judicial authorizations, as needed)
- When IEB completes its investigation, the investigator reviews all the evidence gathered, and decides whether or not to recommend the laying of charges
- If the laying of charges is recommended, a Crown Attorney reviews the evidence, evaluates the benefits to the public of pursuing a conviction, and also evaluates the likelihood of securing a conviction
- If the Crown Attorney decides to pursue a conviction, charges are laid.

### Drinking Water Systems Convictions Overview

During the period between April 1, 2007 and March 31, 2008, there were 19 cases involving convictions related to drinking water systems regulated under the Safe Drinking Water Act and

O. Reg. 170/03. Of the 19 cases, three cases also included contraventions under the Ontario Water Resources Act. The cases with convictions resulted in fines totalling $214,900 (please note that the conviction statistics reflect the year in which the conviction took place, not the year when the offence was committed).

Of the 19 cases, there were 11 cases with convictions in 2007-08 involving 13 municipal residential drinking water systems. The resulting convictions led to fines totalling $157,000. Of these, eight cases involved convictions of municipal residential drinking water system owners that led to fines of $134,500. In addition, two cases with convictions involving three individuals resulted in fines of $12,500 for drinking water violations at municipal systems. As well, one case involving an operating authority resulted in a fine of $10,000.

Of the 19 cases, there were four cases with convictions involving non-municipal year-round residential drinking water systems in 2007-08, resulting in fines totalling $44,000. During the year, four systems serving designated facilities received a total of four convictions, resulting in fines totalling $13,900.

There were no convictions in 2007-08 involving laboratories licensed to perform drinking water testing.

These results are summarized in **Table 14**. See **Appendix 4** for details on drinking water system-related convictions and fines in 2007-08.

**TABLE 14: Summary of 2007-08 Convictions for Drinking Water Prosecutions by Facility Type**

| Facility Type | 2007-08 Total Cases with Convictions | Number of Systems/ Laboratories | 2007-08 Fines |
|---|---|---|---|
| Municipal Residential Drinking Water Systems* | 11 | 13 | $157,000 |
| Non-Municipal Year-Round Residential Systems | 4 | 4 | $44,000 |
| Systems Serving Designated Facilities | 4 | 4 | $13,900 |
| Licensed Laboratories | - | - | - |
| **Total** | **19** | **21** | **$214,900** |

* Includes two cases with convictions against three individual operators and one conviction against an operating authority with fines totalling $22,500

## Certification and Training

Certification and training of the people that deliver drinking water to consumers in Ontario is a key component of the province's drinking water safety net. Ontario's requirements in this area are among the most stringent in North America, and this is one more reason why consumers can have confidence in the safety and quality of the water they get from their taps. All operators must complete comprehensive training at the beginning of their careers and

**DRINKING WATER FACTS:**

A normal dishwasher uses 41 litres of water per cycle.

Five minutes of rinsing dishes under a faucet uses up to 95 litres of water.

Ontario drinking water operator certificates.

continue to complete an additional 20 to 50 hours of training/continuing education each year, depending on the complexity of the system where they work.

## 2007-08 Operator Certification Data

All drinking water operators are required to be certified, through completion of training, examinations and verification of experience. Operators can hold different types of certificates, depending on the type of drinking water system for which they are responsible. System operators who are beginning their careers start out by qualifying for an Operator-in-Training (OIT) certificate which allows them to

**TABLE 15:** Numbers of Certificates for Certified Operators Issued (as of March 31, 2008)

| System Type | OIT* | Class 1** | Class 2** | Class 3** | Class 4** | 2007-08 Total | 2006-07 Total |
|---|---|---|---|---|---|---|---|
| Water Treatment: system collects, produces and treats drinking water | 1,160 | 851 | 622 | 357 | 352 | 3,342 | 3,867 |
| Water Distribution (includes Water Distribution and Supply): system distributes water only or distributes and treats water only by disinfection | 1,372 | 1,194 | 1,433 | 414 | 231 | 4,644 | 5,143 |
| Limited Surface/Ground Water*** | | | | | | 287 | 254 |
| **Total Certificates** | | | | | | **8,273** | **9,264** |

* Operator-in-training certificate
** Drinking water systems are classified on a scale of 1 to 4 based on operational complexity and population served. Correspondingly, operators are certified from Class 1 to 4 based on education, training, examination and experience.
*** A Limited System certificate is the minimum requirement for operating the following categories of systems: small municipal residential (groundwater), non-municipal year-round residential, large non-municipal non-residential serving a designated facility, and large municipal non-residential serving a designated facility.

work in a drinking water system under proper supervision while they continue their training.

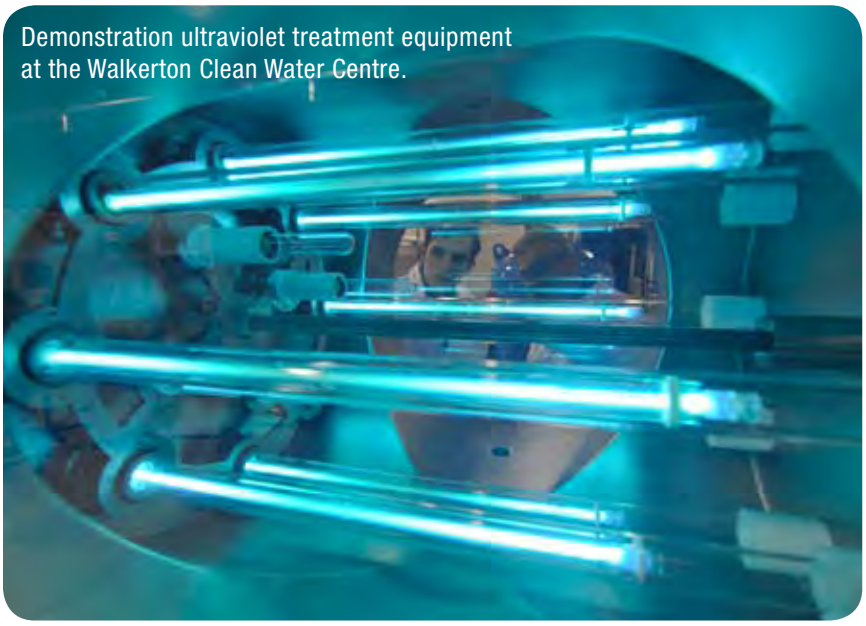
Another type of certificate – called a Limited System Certificate – is the minimum requirement for operating a number of system categories. These system types include small municipal residential (groundwater) systems, non-municipal year-round residential systems, large non-municipal non-residential systems that serve a designated facility, and large municipal non-residential systems that serve a designated facility.

As of March 31, 2008, there were 6,243 certified drinking water operators in Ontario, and those operators held a total of 8,273 active certificates. This represents a decrease of 361 certified operators and 991 certificates, compared to March 31, 2007[2]. **Table 15** summarizes the numbers of certificates held by certified operators as of March 31, 2008.

The change in the number of certified operators is a result of a decrease in the number of people who hold the OIT certificates. The OIT is the initial certificate obtained by new operators and acts as a transitional certificate to Class 1. Prior to 2004 wastewater treatment operators and college students would often maintain drinking water OIT certificates even though they were not employed as a drinking water operator. As a result of stricter certification requirements introduced in 2004, these operators were no longer eligible to maintain drinking water certificates without operating experience. By contrast with the drop in the number of OITs, the number of Class 1 to 4 operators increased slightly during the same period, indicating that the number of persons employed as drinking water operators in the province has remained fairly constant.

## 2007-08 Walkerton Clean Water Centre Initiatives

One of the key stakeholders in the ministry's education and outreach activities is the Walkerton Clean Water Centre, which works with the ministry to deliver drinking water training and education. The Centre has been located in temporary quarters in Walkerton, Ontario, for four years and a new,



Demonstration ultraviolet treatment equipment at the Walkerton Clean Water Centre.

[2]Please note that the 2006-07 CDWI annual report inadvertently reported the total number of drinking water system operators and the total number of active certificates for 2006-07. The actual number of operators as of March 31, 2007 was 4,897, and the actual number of active certificates was 9,264.

**DRINKING WATER FACTS:**

If the total world's water supply was 100 litres, the amount of drinkable water is equivalent to only half a teaspoon!

permanent facility is currently under construction.

The Centre was created to coordinate and deliver training for owners and operating authorities of drinking water systems with a focus on smaller, remote and older systems. They are also working with stakeholders in other jurisdictions on research projects involving water quality and treatment processes. Centre staff also work with the ministry and stakeholders to provide access to training for First Nations on a cost-recovery basis. The Centre's vision is to create a world-class institute dedicated to safe and secure drinking water for the people of Ontario. Each year, the Walkerton Clean Water Centre produces an annual report, which is available at **www.wcwc.ca/en/about/corporate.asp**.

In 2007-08, the Centre coordinated and delivered training for a total of 4,821 drinking water professionals from across the province. On behalf of the ministry, the Centre provides two training courses that are mandatory for drinking water system operators—*Entry Level Drinking Water Operator and Safeguarding Drinking Water Quality*. The Centre also offers the ministry's *Operation of Small Drinking Water Systems* course, which is mandatory for limited system operators. In addition, the Centre provides $3,500 support to each college delivering the Operator-In-Training program.

The Centre offers courses both at its facility in Walkerton and in various other locations throughout the province. More than 25 specialized courses and workshops on drinking water treatment are available and the Centre can make arrangements to have these courses and workshops delivered on-site.

As part of its province-wide mandate, the Centre is also working to build positive relations with First Nations communities through selective training and outreach, and to improve the capabilities of people who operate First Nations drinking water systems.

The Centre operates two mobile training units that provide training on water treatment technologies and information to people in northern Ontario. During 2009-10, the Centre plans to add a third mobile unit, which will be based in southern Ontario.

Construction began in the fall of 2008 to build a new permanent facility for the centre in Walkerton, Ontario. The 19,150 square foot facility will be finished by the fall of 2009,

and will be constructed to Leadership in Energy and Environmental Design (LEED) Gold Building Certification specifications.

## Training Program Update

Ongoing education and training is an important part of continuous improvement. The ministry works with the Operator Certification Working Group and other stakeholders each year to continually review the provincial guidelines for training and certifying drinking water system operators. In 2007-08, work in this area included revising the Operator-in-Training (OIT) exam, and reviewing the OIT guideline to help streamline student applications for OIT certificates.

As of March 31, 2008, a total of 11 community colleges had signed agreements with the ministry to deliver the Entry Level Drinking Water System Operator Course as part of their Environmental Technician programs. The colleges with agreements in place with the ministry are Canadore College, Centennial College, Confederation College, Durham College, Fleming College, Humber College, Georgian College, Mohawk College, Northern College of Applied Arts and Technology, St. Lawrence College and Sault College of Applied Arts and Technology. A number of other colleges have expressed their intention to sign similar agreements.

Operator training at the Walkerton Clean Water Centre.

# 2007-08 Education and Outreach Activities

Education and outreach activities are an important part of Ontario's drinking water safety net. The ministry works to educate and inform both stakeholders and the public throughout the drinking water community, using a range of information tools such as fact sheets, guides, technical documents, webcasts and videos. Each year, the Chief Drinking Water Inspector and other ministry staff also participate in numerous conferences, symposia, meetings and other special events—attending and speaking to audiences that range from drinking water system owners and operators and related associations, world-class scientists, researchers and academics, to children in elementary school.

**CHIEF'S PERSPECTIVE:**

A key element of the ministry's commitment to public accountability and transparency is to provide information about the measures taken to protect drinking water. Our public reports and education and outreach activities give people access to reliable, comprehensive information on regulatory requirements and the state of their drinking water.

The ministry uses a collaborative, informative approach to achieve its regulatory goals and to build trust and strong, effective partnerships with all stakeholders in the drinking water community. Ultimately, the goal of these proactive education and outreach activities is to promote compliance with regulations, continuous improvement and common understanding of the roles and responsibilities of everyone involved in protecting and delivering safe drinking water across Ontario.

This section of the annual report provides highlights of some of the ministry's major activities in education and outreach area during 2007-08.

## Drinking Water Ontario

The Ministry of the Environment launched an online gateway to drinking water information in the spring of 2007 to meet Justice O'Connor's information management related recommendations.

From its inception, the site was organized to help stakeholders and the public access relevant drinking water information. Stakeholders such as owners and operators, laboratories licensed to perform drinking water tests and private well owners can select a personalized view. Likewise, students can choose a view that links them with age appropriate information about programs that deal with drinking water in their schools, people who work in the drinking water field, and other resources about Ontario's drinking water.

During 2007-08, the site continued to provide the public with easy-to-navigate information about drinking water services. It also updated stakeholders with business intelligence and facts relevant to their regulatory requirements, and provided internal ministry staff and drinking water partners with information to help them better coordinate their activities and collaborate on initiatives.

In addition, Drinking Water Ontario's content continued to grow. It was regularly updated with data from the Drinking Water Information System (DWIS) and the Laboratory and Waterworks Inspection System (LWIS)—the ministry's two main drinking water databases. It includes municipal residential drinking water system inspection results, map-based access to profiles of owner and operators of these drinking water systems, links to municipal websites and drinking water quality test results for each municipal residential drinking water system in the province.

Looking toward the future, the site will include historical drinking water quality test results and inspection rating results.

Please visit Drinking Water Ontario at **www.ontario.ca/drinkingwater.**

# TAPPING IN

## Local Festivals Stir Children's Interest in Water

Working with the Children's Water Education Council (the Council), the ministry is helping to stir interest in water among tens of thousands of young people each year. The first Children's Water Festival was held in Milton in 1994. Since then, an estimated 300,000 children have attended water festivals organized by the Council. The water festivals are usually held in the spring or fall, and are interactive events that aim to raise awareness among elementary school children about safe water and safe water practices.

In 2008, a total of 23 communities held children's water festivals including first-time festivals in St. Thomas and Hamilton. More than 80,000 students attended the festivals, supported by some 4,000 volunteers. Local high school students were provided with an opportunity to learn new skills, provide leadership to younger students and earn volunteer credits. The Council also introduced a new assessment tool that allows them to gather feedback from each festival.

In 2007-08, the ministry provided funding to the Children's Water Education Council for drinking water education and outreach to youth and children and for the Council's activities that support local festival committees.

The communities that held festivals in 2008 included Brantford, Chatham-Kent, Durham, Essex, Eastern Ontario (four festival locations), Grey Bruce, Kenora, Halton, Haliburton, Hamilton, Niagara, Peterborough, Sault Ste. Marie, St. Thomas, Sudbury, Trenton and Thunder Bay. To learn more about the Children's Water Education Council and festivals being held across Ontario in 2009, visit the Council's website at **www.cwec.ca**.

## Education and Outreach Activities for O. Reg. 170/03

During 2007-08, the ministry continued its efforts to educate and inform owners and operators of smaller drinking water systems about the requirements and obligations involved in complying with O. Reg. 170/03.

Ministry staff produced and distributed new fact sheets on the regulation during the year, and held a series of owner and operator information sessions for systems

# TAPPING IN

### Outreach Through Webcast Technology

When the government announced its Lead Action Plan in June 2007, it was vital to communicate the information about Ontario's new sampling and testing requirements under O. Reg. 170/03 to all municipal and non-municipal system owners quickly and effectively. Complete and systematic coverage was important since system owners and operators needed to recruit volunteer households who would permit drinking water samples to be taken from their taps.

To communicate the new regulatory requirements involving lead in drinking water, the ministry developed a plan for a number of regional information sessions. To broaden the reach of these sessions, the ministry webcast two of the sessions on the Internet.

The ministry's Barrie field office staff led these webcasts, guiding the session participants through a series of information slides and interactive questions. The sessions were accessible to people on their office computers, enabling them to view the presentations, listen to the audio feed and e-mail questions to the presenters in real time.

In June 2007, when O. Reg. 243/07 introduced new flushing and sampling for lead requirements for schools, private schools and day nurseries, close to 10,000 facility operators needed to learn how to comply with the new regulation. In most cases, these were people who work in buildings that receive water from municipal residential drinking water systems and who had never before taken a drinking water sample to be used for laboratory testing. This presented another opportunity to use webcast technology to reach a large group that is spread out across the province. The ministry took full advantage of this new technology by hosting five separate webcasts tailored to meet the needs of each type of regulated facility. The ministry also produced two instructional videos for operators of schools, private schools and day nurseries to show them how to properly flush a building's plumbing and how to take a drinking water sample for lead testing. These videos were produced in both English and French, and are available in DVD format or online through the Drinking Water Ontario website (**www.ontario.ca/drinkingwater**).

### On-line and DVD Workshops Summary Available

In addition to using webcasts to reach out to stakeholders in 2007-08, the ministry created a DVD with an audiovisual summary of the Municipal Drinking Water Licensing Program workshops that were held in the fall of 2007. The voice-over recorded in the studio was synchronized to a presentation that summarizes the information from the workshops. The DVDs were distributed to each municipal residential drinking water system owner in Ontario. By using new technology to reach out to its drinking water partners and stakeholders, the ministry is making an important difference.

# TAPPING IN

## Reaching Out to Students and Young People

Recognizing the importance of reaching Ontario's next generation of water consumers, the ministry developed a number of special education and outreach initiatives in 2007-08 that were specifically targeted at students, teens and young children.

In 2007-08, the Drinking Water Ontario website added a new comic book feature called *Pipe Dreams—the Drinking Water Adventures of Danny Droplet*—a colourful, informative book about drinking water treatment. *Pipe Dreams* is targeted primarily at children in Grades 2 to 5, and is complemented by fun learning activities and a colourful classroom poster.

For teens and high school students, the Drinking Water Ontario website contains information on careers in water, as well as a link to job opportunities at the Ontario Water Works Association. The site also offers information on the Walkerton Clean Water Centre Scholarship Program, which supports graduate students in universities who are pursuing studies in drinking water quality.

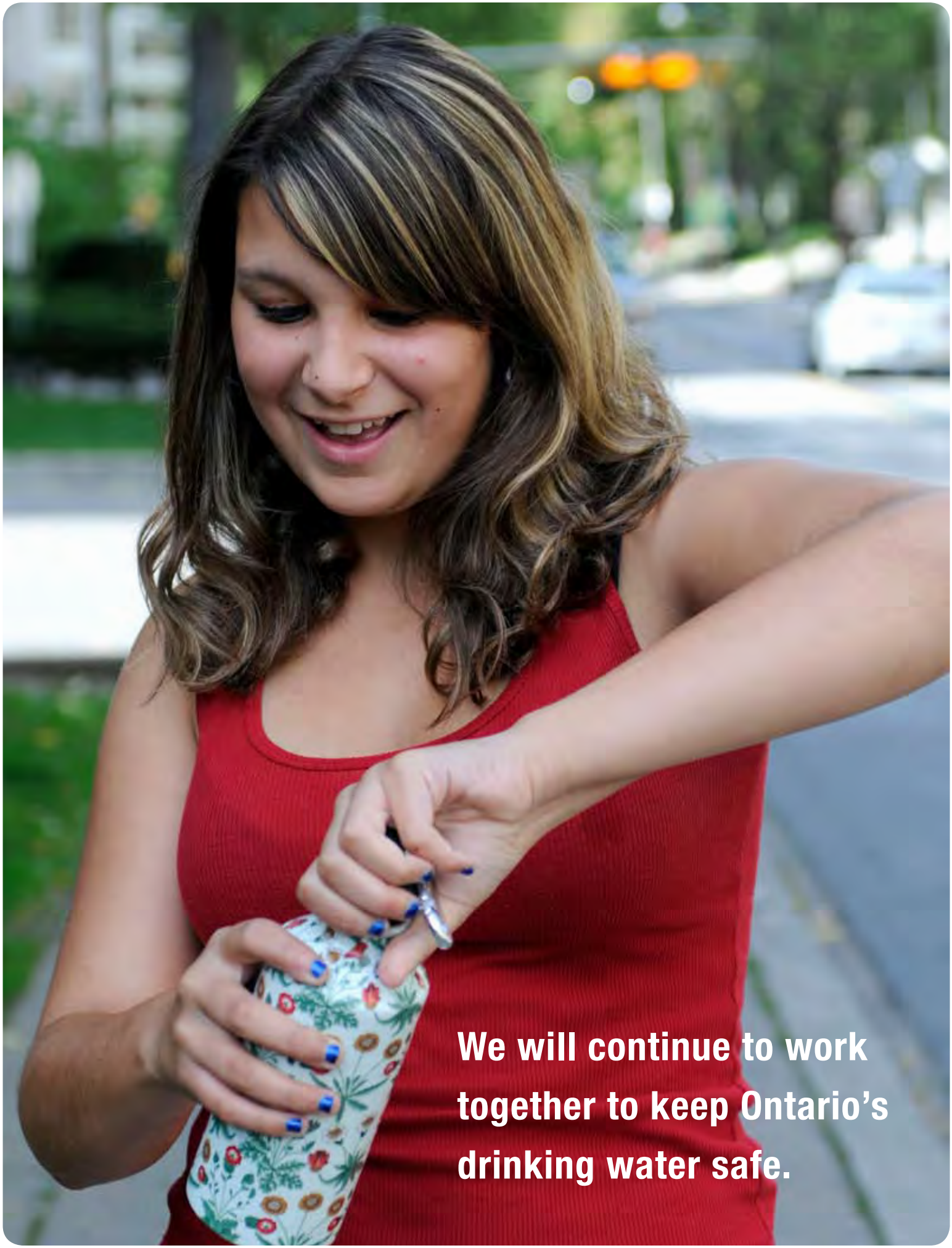
For younger children, the Drinking Water Ontario website offers an animated tour of a drinking water plant, which explains the various steps involved in making sure our drinking water is clean and safe.

Also on the website are descriptions of how water-related issues are covered by the Ontario school curriculum, and links to sites such as the American Water Works Association's children's page, which offers information on the story of drinking water and ideas for water-related science projects.

serving designated facilities and non-municipal year-round residential systems throughout the province.

In November 2007, the ministry held a series of information sessions for drinking water system owners and operators on the government's new requirements for lead testing and monitoring. Six of these sessions were held for municipal system owners and operators, and nine sessions were held for owners and operators of non-municipal year-round residential systems. In all, 558 people attended the sessions, including many who participated by webcast.


A Ministry of the Environment employee explaining the drinking water cycle to children at the Royal Winter Fair.


We will continue to work together to keep Ontario's drinking water safe.

# The Year Ahead

**Many dedicated and highly skilled partners work together to provide our homes and businesses with high quality drinking water.**

Maintaining safe, high quality drinking water is a major undertaking—one that involves the ministry and many partners and stakeholders across Ontario. The ministry is committed to continuous improvement, and to making sure that the province's regulatory requirements for drinking water quality are met. And to deliver on those commitments, work on several key drinking water initiatives will continue over the coming months.

One example is the ministry's continuing implementation of the new Municipal Drinking Water Licensing Program. Ministry staff will continue to work closely with drinking water system owners, operators, operating authorities and other stakeholders in the coming months to enable a smooth, seamless transition to the new system. The implementation is currently on track, and the ministry expects that every municipal residential drinking water system will have obtained a licence by 2012. Within the next few months, the ministry will be publishing two additional guidance documents related to this program.

During the coming year, local public health units and the Ministry of Health and Long-Term Care will continue to move forward on their new responsibility for oversight of small drinking water systems. This involves using a risk-based approach to the treatment and monitoring of these systems. The Ministry of Health and Long-Term Care will be contributing information from the local public health units on small drinking water systems for future reports.

Another initiative that will be reported in the next annual report involves the new inspection ratings for municipal residential drinking water systems, which will be prepared for the first time using the ministry's enhanced risk assessment methodology. These changes in the risk assessment methodology are described in detail in **Appendix 1**. The ministry's inspectors began using the methodology on April 1, 2008. This means that all the inspection

ratings reported for 2008-09 will be based on this new approach.

I look forward to further progress on the implementation of the Lead Action Plan and reporting results from the second round of community testing. The ministry will continue to work with owners and operating authorities of municipal residential drinking water systems, schools, private schools and day nurseries over the coming months to address the lead issue and to make sure that the province's new regulatory requirements for flushing and testing are met.

Progress on source protection planning will also continue, as local source protection committees complete and obtain approval for their required terms of reference, and move on to prepare local assessment reports that identify threats to drinking water sources. Source protection planning represents a major undertaking for the ministry and its partners, and next year's annual report will give another detailed update on our progress.

The ministry expects to continue working on source protection with First Nations communities during the coming year. Under the Clean Water Act, First Nations communities located within the 40 source protection areas in Ontario can choose to include their drinking water systems in the local source protection planning process, by submitting a Band Council resolution to the Minister of the Environment requesting that their drinking water systems be included. The systems can then be included in the local process through the passing of a provincial regulation.

The ministry will continue to report on the quality of Ontario's drinking water, through subsequent Chief's reports and the Minister's Annual Report on Drinking Water. These reports can be found on the Drinking Water Ontario website at **www.ontario.ca/drinkingwater**.

Ontario's drinking water safety net works to safeguard public health by protecting the drinking water on which we all rely. Our drinking

water is among the best protected in the world—and working together, we can make sure it stays that way. Drinking water partners will continue to safeguard all aspects of Ontario's drinking water safety net through ongoing cooperation, protective measures and, when required, immediate **corrective action**.

The Chief Drinking Water Inspector welcomes feedback on this report, as well as comments and ideas for future editions of the report. The Chief can be reached at **drinking.water@ontario.ca.**

# Glossary

| C | |
|---|---|
| **Cautioned Statement:** | in the course of an investigation, an Investigator may ask a person suspected of committing an offence whether he/she wishes to give a statement regarding the alleged offence before charges are issued. If the Investigator has reasonable and probable grounds to believe that the person has committed the offence, the Investigator must first caution that person. A caution is administered either verbally or in writing to inform the person of the right to remain silent, the right to retain counsel before being interviewed and that anything said may be used as evidence against the person. |
| **Certificate of Approval:** | under the Safe Drinking Water Act, a legal instrument which permits the construction or alteration and operation of certain categories of drinking water system, or parts thereof. The Ministry issues this document after an engineering review of the proposed facilities and when it is satisfied that the facilities will work as intended and will be able at all times to supply drinking water meeting Ontario Drinking Water Quality Standards and requirements of O.Reg. 170/03. |
| **Chlorine Residual:** | the concentration of chlorine remaining in the chlorinated water at the end of a given contact time that is available to continue to disinfect. Measured as Free Chlorine, Combined Chlorine and Total Chlorine. |
| **Conservation Authority:** | local watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations (www.conservation-ontario.on.ca). |
| **Contaminant:** | any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect. |
| **Corrective Action:** | steps that must be taken following an adverse water quality incident as specified by O. Reg. 170/03, Schedules 17 & 18, directed by the local medical officer of health or drinking water inspector, that are necessary to protect human health. |
| **Corrosivity:** | water or liquids having the ability to leach material (especially metals) from the surface of the material with which it is in contact. |
| **D** | |
| **Disinfection:** | the destruction or inactivation of pathogenic and other kinds of microorganisms by physical or chemical means. |
| **Director's Order:** | a legal instrument issued by an appointed Ministry of the Environment Director under the authority of a provision of a statute administered by the Minister of the Environment. |

| | |
|---|---|
| **E** | |
| ***E. coli* (*Escherichia coli*):** | a species of bacteria naturally present in the intestines of humans and animals. If animal or human waste containing *E. coli* contaminates drinking water it may cause gastrointestinal disease in humans. Most types of *E. coli* are harmless, but some active strains, especially O157:H7, produce harmful toxins and can cause severe illness. |
| **Exceedance:** | violation of a limit for a contaminant as prescribed in the Ontario Drinking Water Quality Standards regulation (O.Reg. 169/03). |
| **F** | |
| **Filtration:** | the separation of suspended solid particles from a fluid stream by passage of the fluid through a granular or membrane filter medium that retains most of the solids on or within itself. |
| **P** | |
| **Permit to Take Water (PTTW):** | any person that takes more than 50,000 litres of water per day from any source requires a permit from the Ministry of the Environment under the Ontario Water Resources Act. |
| **Provincial Officer Order:** | an order issued by a Ministry of the Environment Provincial Officer to any person that contravenes any act governed by the Ministry of the Environment. |
| **R** | |
| **Raw Water:** | surface or groundwater that is available as a source of drinking water but has not received any treatment. |
| **T** | |
| **Turbidity:** | a visible haze or cloudiness in water caused by the presence of suspended matter, resulting in the scattering and absorption of light. The cloudier the water, the greater the turbidity. |
| **U** | |
| **Ultrafiltration:** | a pressure-driven membrane filtration process that removes submicron particles (including viruses) and some large molecule dissolved organics. |
| **W** | |
| **Waterborne Disease:** | a disease transmitted through the ingestion of contaminated water. Water acts as a passive carrier of the infectious agent, chemical or waterborne pathogen. |
| **Watershed:** | a region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water. |

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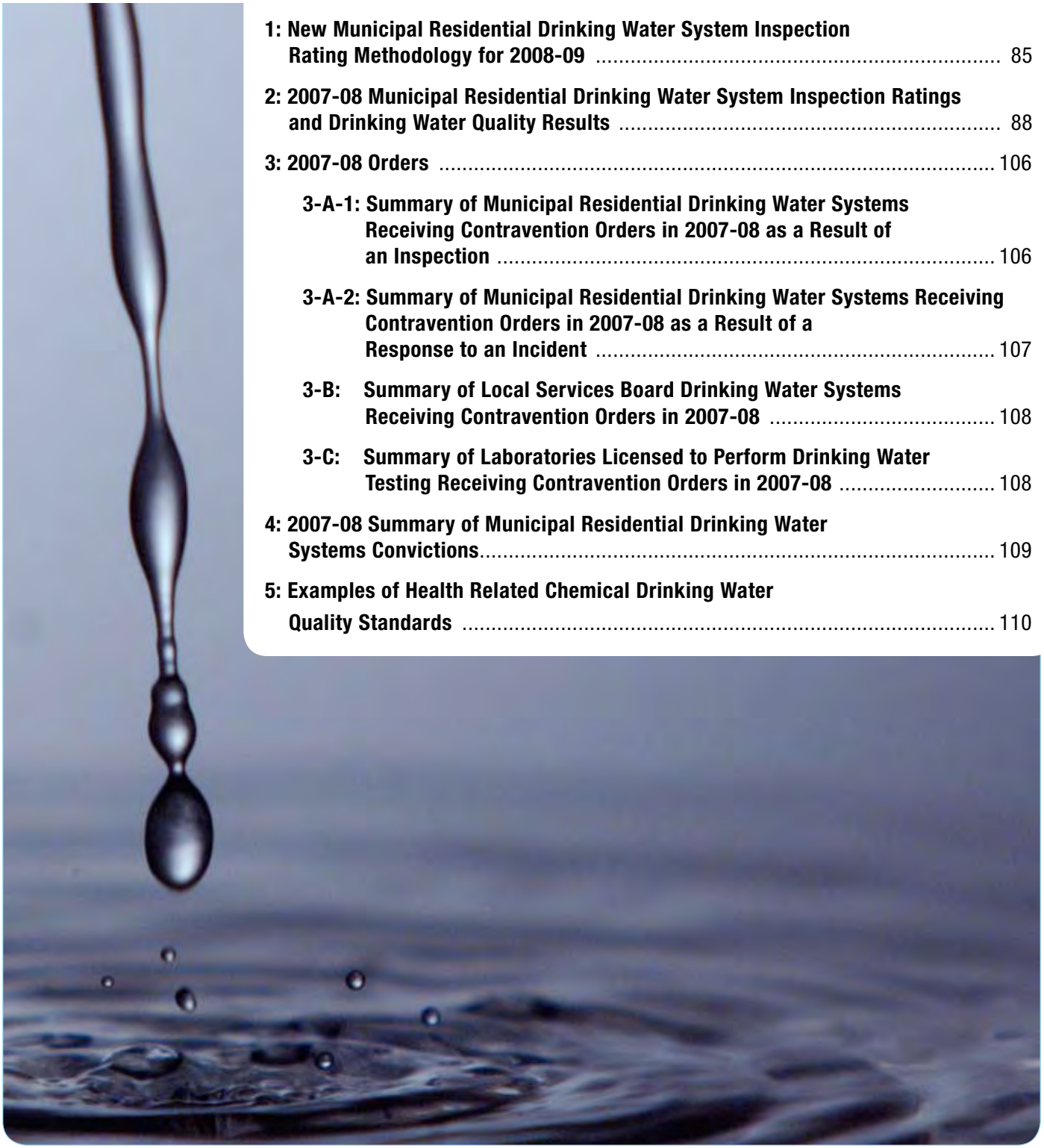


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## APPENDIX 1: New Municipal Residential Drinking Water System Inspection Rating Methodology for 2008-09

The ministry's annual inspection ratings are designed to encourage drinking water systems to strive for continuous improvement and ultimately to meet the ministry's long-term goal of 100 per cent compliance by all systems. The ratings also help measure each system's progress from year to year, and provide a straightforward way of comparing performance in a single year, and from one year to the next.

### Background

The risk-based inspection rating process developed by the ministry provides a quantitative measure of the inspection results. The rating is expressed as a number out of 100, where a rating of 100 per cent means that the inspector found zero non-compliance issues during the system's annual inspection.

Calculating the annual inspection ratings focuses on a risk-based assessment methodology. Risk management is a systematic way of identifying and addressing existing and potential hazards. It requires understanding the risks that are involved in a process, the likelihood that they will occur, the consequences and/or potential consequences if they do occur, and the actions that can be taken to eliminate or mitigate the impact.

This approach to risk management aligns closely with the Inspection, Investigation and Enforcement (II&E) Risk Management Framework. This framework is built on universally accepted risk assessment standards, and has now been adopted by ministries as a standard approach to managing risk.

On April 1, 2008, the ministry adopted a revised, improved methodology for calculating the risk ratings for municipal residential drinking water systems. The changes are designed to give the ministry an improved metric for evaluating risk and safety in the inspections of these drinking water systems. The improved methodology uses a larger scale for consequence which further refines risk values.

The inspection rating system will continue to highlight to the public and inform municipal system owners and operators regarding their own performance results and trends compared to other similar systems across the province.

The ministry introduced the inspection ratings in the CDWI 2005-06 Annual Report, and these ratings are available on the Drinking Water Ontario website. The current report provides individual ratings in **Appendix 2**, based on the original methodology. These inspection ratings are also available on the Drinking Water Ontario website (**www.ontario.ca/drinkingwater**).

### Determining Likelihood and Consequence Values

Ministry drinking water specialists studied the existing risk rating methodology used to calculate annual inspection ratings for municipal residential drinking water systems. It was concluded that by making a number of changes, the rating system could be made more accurate and effective. For example, the new methodology has enhanced the approach to calculating risk, especially the likelihood component, and its accuracy in reflecting the frequency of a consequence occurring.

Every question in the ministry's inspection protocol for drinking water system

inspections was analyzed. For every regulatory issue covered by each question, the potential consequences of non-compliance to the delivery of safe drinking water were determined.

In the ministry's previous risk rating methodology, an inspection finding of compliance resulted in a likelihood value of zero, while a finding of non-compliance resulted in a likelihood value of one. Similarly, values were assigned to the potential consequences of non-compliance, on a sliding scale. The consequence value of a non-compliance finding ranged from one to four, depending on the potential impact of the non-compliance to human health and the environment.

In the revised risk rating methodology, a wider range of values are assigned to the likelihood of non-compliance. Instead of either zero or one, the likelihood values now range from zero to four. A likelihood value of zero means "possible but highly unlikely," while a likelihood value of four means "almost certain." **Table 1-A** describes the likelihood values assigned to the ranges of a consequence occurring.

Similarly, the revised methodology has an extended sliding scale for the values assigned to the consequences of non-compliance. These values range from one to eight—where a value of one means "medium administrative consequence," and a value of eight means "major health consequence." **Table 1-B** describes the assigned consequence values.

Using these new values, the ministry calculates a risk rating for every inspection question. The formula for calculating risk is:

**RISK = LIKELIHOOD VALUE (0 to 4) X CONSEQUENCE VALUE (1 to 8)**

As a result, in the revised risk rating methodology, the lowest possible risk value for a question is zero (0 X 1), while the maximum risk is 32 (4 X 8). **Table 1-C** provides several examples of the typical calculations involved.

To arrive at the overall rating for each municipal residential drinking water system, the risk ratings for each protocol question where the answer was "no" are added up. This number is then divided by the sum of the risk ratings for all the questions asked during the inspection, which is the maximum question rating. The resulting inspection risk rating percentage is subtracted from 100 per cent, which produces the final inspection rating for that system.

In 2008-09, the ministry's inspection protocol for municipal drinking water systems contained a total of 117 regulatory questions. The protocol questions cover the comprehensive range of drinking water regulatory issues from relatively minor administrative items to the health impacts of drinking water quality.

Beginning in the 2008-09 year, municipal residential drinking water system owners and operators received reports for inspections that were carried out using the revised risk rating methodology. The next series of inspection ratings, based on the 2008-09 inspection program, will be published in next year's edition of the Chief Drinking Water Inspector's Annual Report.

**TABLE 1-A: Likelihood Values Assigned To Range Of Consequence Occurring**

| Likelihood of the Consequence Occurring | Likelihood Value |
|---|---|
| 0% | 0 |
| 1 – 10% | 1 |
| 11 – 49% | 2 |
| 50 – 89% | 3 |
| 90 – 100% | 4 |

**TABLE 1-B: Description of Consequence Values Used in the Risk Rating Model**

| Consequence Value | Consequence | Description |
|---|---|---|
| 1 & 2 | **Medium & Major** Administrative Consequence | Administrative non-compliance that does not result in or does not have the potential to result in any environmental or health impacts. It generally includes the violation of reporting and record-keeping requirements and some monitoring and sampling requirements (examples of exclusions would be those under the Safe Drinking Water Act). |
| 3 | **Minor** Environmental Consequence | Known or likely impact to animal, plant, property, business or resource that requires little or no remediation. |
| 4 | **Minor** Health Consequence | Known or likely minor human health impact i.e. does not require hospitalization or emergency treatment and does not result in illness. |
| 5 | **Medium** Environmental Consequence | Known or likely adverse impact to animal, plant, property, business or resources which is short term, localized, and is amenable to full remediation through the application of abatement measures. |
| 6 | **Major** Environmental Consequence | Known or likely adverse impact to animal, plant, property, business or resources that is widespread, long term, difficult to remediate, or lethal in effect. |
| 7 | **Medium** Health Consequence | Known or anticipated human health impact that may be life shortening, may result in hospitalization or serious illness, may be reversible, i.e. requires hospitalization/emergency care for treatment of impact/illness but is not known in chronic long term health impacts. |
| 8 | **Major** Health Consequence | Known or likely human health impact that is lethal or severe in effect, can result in hospitalization of persons, may result in death or long term health impacts. |

**TABLE 1-C: Sample Inspection Rating Calculation**

| Inspection Question | Maximum Question Risk Rating | Inspector's Response | Question Risk Rating |
|---|---|---|---|
| Does a valid Certificate of Approval exist for the facility? | 4 × 1 = 4 | NO | 4 |
| Are all required microbiological water quality monitoring requirements being met? | 3 × 7 = 21 | YES | 0 |
| Does the record system allow the reader to unambiguously identify the person making the logbook entry? | 2 × 2 = 4 | YES | 0 |
| **Maximum Inspection Rating** | **29** | | **4 / 29** |
| **Inspection Risk Rating** | **4 ÷ 29 = 13.79%** | | |
| **Final Inspection Rating** | **100% - 13.79% = 86.21%** | | |

## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Adjala-Tosorontio, Township of | Colgan Well Supply | 100.00% | 99.18% |
| Adjala-Tosorontio, Township of | Everett Well Supply | 100.00% | 100.00% |
| Adjala-Tosorontio, Township of | Hockley Well Supply | 100.00% | 100.00% |
| Adjala-Tosorontio, Township of | Lisle Well Supply | 100.00% | 100.00% |
| Adjala-Tosorontio, Township of | Loretto Heights Well Supply | 100.00% | 100.00% |
| Adjala-Tosorontio, Township of | Rosemont Well Supply | 100.00% | 100.00% |
| Adjala-Tosorontio, Township of | Weca Well Supply | 100.00% | 100.00% |
| Ajax, Town of | Ajax Water Treatment Plant | 100.00% | 99.95% |
| Alfred and Plantagenet, Township of | Lefaivre Water Treatment Plant | 100.00% | 100.00% |
| Alfred and Plantagenet, Township of | Plantagenet Water Treatment Plant | 100.00% | 98.94% |
| Alfred and Plantagenet, Township of | Wendover Water Treatment Plant | 100.00% | 100.00% |
| Alnwick/Haldimand, Township of | Grafton Well Supply | 100.00% | 100.00% |
| Amaranth, Township of | Waldemar Well Supply | 98.39% | 100.00% |
| Amherstburg, Town of | Amherstburg Water Treatment Plant | 91.86% | 99.90% |
| Armstrong, Township of | Earlton Well Supply | 100.00% | 100.00% |
| Arnprior, Town of | Arnprior Water Treatment Plant | 86.67% | 99.87% |
| Arran-Elderslie, Municipality of | Arran-Elderslie Well Supply | 94.18% | 100.00% |
| Arran-Elderslie, Municipality of | Tara Well Supply | 90.04% | 100.00% |
| Ashfield-Colborne-Wawanosh, Township of | Benmiller Inn Well Supply | 100.00% | 97.22% |
| Ashfield-Colborne-Wawanosh, Township of | Century Heights Subdivision Well Supply | 95.38% | 98.72% |
| Ashfield-Colborne-Wawanosh, Township of | Courtney Subdivision Distribution System | 100.00% | 99.37% |
| Ashfield-Colborne-Wawanosh, Township of | Dungannon Well Supply | 100.00% | 99.52% |
| Ashfield-Colborne-Wawanosh, Township of | Huron Sands Well Supply | 100.00% | 96.08% |
| Ashfield-Colborne-Wawanosh, Township of | Maitlandview Estates Well Supply | 96.70% | 100.00% |
| Ashfield-Colborne-Wawanosh, Township of | South Lucknow Distribution System | 95.35% | 99.27% |
| Asphodel-Norwood, Township of | Norwood Well Supply | 94.29% | 100.00% |
| Asphodel-Norwood, Township of | Trentview Estates Development Distribution System | 95.52% | 100.00% |
| Assiginack, Township of | Assiginack Water Treatment Plant | 91.54% | 100.00% |
| Assiginack, Township of | Sunsite Estates Subdivision Water Treatment Plant | 94.62% | 100.00% |
| Atikokan, Township of | Atikokan Water Treatment Plant | 86.47% | 100.00% |
| Aurora, Town of | Aurora Distribution System | 100.00% | 99.94% |
| Aurora, Town of | Aurora Well Supply | 100.00% | 100.00% |
| Aylmer, Town of | Aylmer (Elgin Area Water Supply) Distribution System | 100.00% | 100.00% |
| Aylmer, Town of | Aylmer Secondary Distribution System | 100.00% | 100.00% |
| Bancroft, Town of | Bancroft Water Treatment Plant | 100.00% | 100.00% |
| Barrie, City of | Barrie Well Supply | 96.86% | 99.84% |
| Bayham, Municipality of | Bayham (Elgin Area Water Supply) Distribution System | 100.00% | 99.71% |
| Belleville, City of | Belleville Water Treatment Plant | 96.20% | 99.84% |
| Belleville, City of | Point Anne Hamlet Water Treatment Plant | 100.00% | 100.00% |
| Billings, Township of | Kagawong Water Treatment Plant | 98.05% | 100.00% |
| Black River-Matheson, Township of | Holtyre Well Supply | 95.52% | 100.00% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Black River-Matheson, Township of | Matheson Well Supply | 98.84% | 100.00% |
| Black River-Matheson, Township of | Ramore (Playfair) Well Supply | 97.20% | 100.00% |
| Black River-Matheson, Township of | Val Gagne Well Supply | 98.05% | 98.72% |
| Blandford-Blenheim, Township of | Bright Well Supply | 100.00% | 100.00% |
| Blandford-Blenheim, Township of | Drumbo Well Supply | 100.00% | 99.45% |
| Blandford-Blenheim, Township of | Plattsville Well Supply | 100.00% | 99.76% |
| Blandford-Blenheim, Township of | Princeton Countryside Manor Cistern System | 92.36% | 100.00% |
| Blind River, Town of | Blind River Well Supply | 83.91% | 99.28% |
| Bluewater, Municipality of | Bluewater Distribution System | 100.00% | 100.00% |
| Bluewater, Municipality of | Carriage Lane Well Supply | 100.00% | 100.00% |
| Bluewater, Municipality of | Harbour Lights Development Well Supply | 100.00% | 100.00% |
| Bluewater, Municipality of | Hensall Well Supply | 97.88% | 100.00% |
| Bluewater, Municipality of | Zurich Well Supply | 95.71% | 99.73% |
| Bonnechere Valley, Township of | Eganville Water Treatment Plant | 88.89% | 100.00% |
| Bracebridge, Town of | Bracebridge (Kirby Beach) Water Treatment Plant | 100.00% | 100.00% |
| Bradford West Gwillimbury, Town of | Bradford/Bondhead Well Supply | 100.00% | 99.65% |
| Brant, County of | Airport Well Supply | 100.00% | 100.00% |
| Brant, County of | Cainsville Distribution System | 100.00% | 100.00% |
| Brant, County of | Mount Pleasant Well Supply | 100.00% | 100.00% |
| Brant, County of | Paris Well Supply | 100.00% | 99.78% |
| Brant, County of | St. George Well Supply | 100.00% | 100.00% |
| Brantford, City of | Brantford (Holmedale) Water Treatment Plant | 96.70% | 98.96% |
| Brighton, Municipality of | Brighton Well Supply | 93.82% | 100.00% |
| Brock, Township of | Beaverton Water Treatment Plant | 100.00% | 100.00% |
| Brock, Township of | Cannington Well Supply | 100.00% | 99.95% |
| Brock, Township of | Sunderland Well Supply | 98.18% | 99.90% |
| Brockton, Municipality of | Hanover Water Treatment Plant | 76.89% | 100.00% |
| Brockton, Municipality of | Lake Rosalind Well Supply | 95.95% | 100.00% |
| Brockton, Municipality of | Powers Subdivision Well Supply | 93.19% | 100.00% |
| Brockton, Municipality of | Walkerton Well Supply | 95.44% | 99.09% |
| Brockville, City of | Brockville Water Treatment Plant | 100.00% | 100.00% |
| Brooke-Alvinston, Municipality of | Alvinston Distribution System | 100.00% | 100.00% |
| Bruce Mines, Town of | Bruce Mines Water Treatment Plant | 96.59% | 100.00% |
| Burk's Falls, Village of | Burk's Falls Well Supply | 94.92% | 100.00% |
| Burlington, City of | Bridgeview Community Distribution System | 100.00% | 100.00% |
| Burlington, City of | Burlington Water Treatment Plant | 100.00% | 99.32% |
| Caledon, Town of | Alton Well Supply | 100.00% | 100.00% |
| Caledon, Town of | Caledon East Well Supply | 100.00% | 100.00% |
| Caledon, Town of | Caledon Village Well Supply | 100.00% | 100.00% |
| Caledon, Town of | Cheltenham-Terra Cotta Well Supply | 100.00% | 100.00% |
| Caledon, Town of | Inglewood Well Supply | 100.00% | 100.00% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Caledon, Town of | Palgrave Well Supply | 100.00% | 100.00% |
| Callander, Municipality of | Callander Water Treatment Plant | 100.00% | 100.00% |
| Cambridge, City of | Cambridge Distribution System | 100.00% | 99.97% |
| Cambridge, City of | Cambridge Well Supply | 90.18% | 100.00% |
| Carleton Place, Town of | Carleton Place Water Treatment Plant | 95.74% | 99.90% |
| Casselman, Village of | Casselman Water Treatment Plant | 100.00% | 100.00% |
| Cavan-Monaghan, Township of | Millbrook Well Supply | 92.50% | 100.00% |
| Central Elgin, Municipality of | Belmont Well Supply | 100.00% | 100.00% |
| Central Elgin, Municipality of | Central Elgin (Elgin Area Water Supply) Distribution System | 100.00% | 99.86% |
| Central Elgin, Municipality of | Elgin Primary Area Water Supply | 100.00% | 100.00% |
| Central Huron, Municipality of | Auburn Well Supply | 100.00% | 100.00% |
| Central Huron, Municipality of | Clinton Well Supply | 100.00% | 98.82% |
| Central Huron, Municipality of | Kelly Well Supply | 100.00% | 100.00% |
| Central Huron, Municipality of | McClinchey Well Supply | 100.00% | 100.00% |
| Central Huron, Municipality of | S.A.M. Well Supply | 100.00% | 100.00% |
| Central Huron, Municipality of | Vandewetering Subdivision Well Supply | 100.00% | 100.00% |
| Central Manitoulin, Municipality of | Mindemoya Water Treatment Plant | 100.00% | 100.00% |
| Centre Wellington, Township of | Elora Well Supply | 100.00% | 100.00% |
| Centre Wellington, Township of | Fergus Well Supply | 96.34% | 99.75% |
| Champlain, Township of | L'Orignal Distribution System | 100.00% | 100.00% |
| Champlain, Township of | Vankleek Hill Distribution System | 98.04% | 100.00% |
| Chapleau, Township of | Chapleau Water Treatment Plant | 56.32% | 99.63% |
| Chapple, Township of | Barwick Well Supply | 100.00% | 100.00% |
| Charlton and Dack, Municipality of | Bradley Subdivision Distribution System | 95.83% | 100.00% |
| Charlton and Dack, Municipality of | Charlton Water Treatment Plant | 99.21% | 100.00% |
| Chatham-Kent, Municipality of | Bothwell (West Elgin Area Water Supply) Distribution System | 100.00% | 99.84% |
| Chatham-Kent, Municipality of | Chatham Water Treatment Plant | 94.70% | 99.97% |
| Chatham-Kent, Municipality of | Highgate Pure Water Well Supply | 100.00% | 99.53% |
| Chatham-Kent, Municipality of | North Wallaceburg Distribution System | 100.00% | 100.00% |
| Chatham-Kent, Municipality of | Ridgetown Well Supply | 100.00% | 99.49% |
| Chatham-Kent, Municipality of | South Chatham-Kent Water Treatment Plant | 100.00% | 100.00% |
| Chatham-Kent, Municipality of | Wallaceburg Water Treatment Plant | 100.00% | 100.00% |
| Chatham-Kent, Municipality of | Wheatley Water Treatment Plant | 100.00% | 100.00% |
| Chatsworth, Township of | Chatsworth Well Supply | 91.58% | 100.00% |
| Chatsworth, Township of | Walter's Falls Well Supply | 81.14% | 100.00% |
| Clarence-Rockland, City of | Rockland Water Treatment Plant | 90.51% | 99.81% |
| Clarington, Municipality of | Bowmanville Water Treatment Plant | 95.56% | 99.66% |
| Clarington, Municipality of | Newcastle Water Treatment Plant | 97.01% | 99.90% |
| Clarington, Municipality of | Orono Well Supply | 100.00% | 100.00% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Clearview, Township of | Buckingham Woods Well Supply | 100.00% | 100.00% |
| Clearview, Township of | Colling-Woodlands Well Supply | 100.00% | 100.00% |
| Clearview, Township of | Creemore Well Supply | 100.00% | 99.78% |
| Clearview, Township of | McKean Subdivision Well Supply | 100.00% | 100.00% |
| Clearview, Township of | New Lowell Well Supply | 100.00% | 99.77% |
| Clearview, Township of | Stayner Well Supply | 96.18% | 99.85% |
| Cobalt, Town of | Cobalt Water Treatment Plant | 96.44% | 99.22% |
| Cobourg, Town of | Cobourg Water Treatment Plant | 100.00% | 100.00% |
| Cochrane, Town of | Cochrane Well Supply | 99.25% | 99.85% |
| Coleman, Township of | Coleman Distribution System | 100.00% | 99.22% |
| Collingwood, Town of | Collingwood (Raymond A. Barker Ultrafiltration Plant) Water Treatment Plant | 98.28% | 100.00% |
| Cornwall, City of | Cornwall Water Treatment Plant | 93.44% | 100.00% |
| Cramahe, Township of | Colborne Well Supply | 100.00% | 99.78% |
| Dawn-Euphemia, Township of | Dawn-Euphemia Water Distribution System | 100.00% | 100.00% |
| Deep River, Town of | Deep River Water Treatment Plant | 91.94% | 99.32% |
| Deseronto, Town of | Deseronto Water Treatment Plant | 97.20% | 100.00% |
| Dryden, City of | Dryden Water Treatment Plant | 94.27% | 100.00% |
| Dubreuilville, Township of | Dubreuilville Well Supply | 100.00% | 100.00% |
| Dutton/Dunwich, Municipality of | Dutton/Dunwich (West Elgin Area Water Supply) Distribution System | 98.30% | 100.00% |
| Ear Falls, Township of | Ear Falls Water Treatment Plant | 94.82% | 100.00% |
| East Garafraxa, Township of | Marsville Subdivision Well Supply | 98.30% | 100.00% |
| East Gwillimbury, Town of | Holland Landing Well Supply | 100.00% | 100.00% |
| East Gwillimbury, Town of | Holland-Queensville-Sharon Distribution System | 100.00% | 100.00% |
| East Gwillimbury, Town of | Mount Albert Distribution System | 100.00% | 100.00% |
| East Gwillimbury, Town of | Mount Albert Well Supply | 100.00% | 100.00% |
| East Gwillimbury, Town of | Queensville (York Region) Well Supply | 100.00% | 100.00% |
| East Luther Grand Valley, Township of | East Luther Grand Valley Well Supply | 100.00% | 100.00% |
| East Zorra-Tavistock, Township of | Hickson-King Subdivision Well Supply | 94.67% | 98.67% |
| East Zorra-Tavistock, Township of | Innerkip Well Supply | 100.00% | 100.00% |
| East Zorra-Tavistock, Township of | Tavistock Well Supply | 100.00% | 100.00% |
| Edwardsburgh/Cardinal, Township of | Bennett Street Well Supply | 98.13% | 100.00% |
| Edwardsburgh/Cardinal, Township of | Cardinal Water Treatment Plant | 100.00% | 100.00% |
| Edwardsburgh/Cardinal, Township of | Edwardsburgh Industrial Park Distribution System | 97.81% | 100.00% |
| Elizabethtown-Kitley, Township of | Elizabethtown-Kitley Distribution System | 100.00% | 98.91% |
| Elliot Lake, City of | Elliot Lake Water Treatment Plant | 100.00% | 100.00% |
| Emo, Township of | Emo Water Treatment Plant | 100.00% | 100.00% |
| Englehart, Town of | Englehart Well Supply | 100.00% | 99.48% |
| Enniskillen, Township of | Enniskillen Township Distribution System | 100.00% | 100.00% |
| Erin, Town of | Erin Well Supply | 100.00% | 100.00% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Erin, Town of | Hillsburgh Well Supply | 100.00% | 100.00% |
| Espanola, Town of | Espanola Water Treatment Plant | 96.43% | 100.00% |
| Essa, Township of | Angus Well Supply | 100.00% | 99.85% |
| Essa, Township of | Baxter Well Supply | 100.00% | 100.00% |
| Essa, Township of | Glen Ave (Thornton) Well Supply | 96.87% | 100.00% |
| Essex, Town of | Essex (Union Water Treatment Plant) Distribution System | 100.00% | 100.00% |
| Essex, Town of | Harrow-Colchester South Water Treatment Plant | 98.47% | 99.90% |
| Fauquier-Strickland, Township of | Fauquier Water Treatment Plant | 100.00% | 100.00% |
| Fort Erie, Town of | Fort Erie (Rosehill) Water Treatment Plant | 99.21% | 100.00% |
| Fort Erie, Town of | Fort Erie Distribution System | 97.69% | 99.82% |
| Fort Frances, Town of | Fort Frances Water Treatment Plant | 100.00% | 100.00% |
| Front of Yonge, Township of | Miller Manor Apartments Well Supply | 92.63% | 100.00% |
| Galway-Cavendish and Harvey, Township of | Alpine/Pirates Glen Well Supply | 96.15% | 99.77% |
| Galway-Cavendish and Harvey, Township of | Buckhorn Lake Estates Well Supply | 89.44% | 100.00% |
| Gananoque, Town of | James W. King Water Treatment Plant | 85.71% | 99.27% |
| Georgian Bay, Township of | MacTier (Beech Avenue) Water Treatment Plant | 100.00% | 99.80% |
| Georgian Bay, Township of | Port Severn Water Treatment Plant | 100.00% | 100.00% |
| Georgian Bluffs, Township of | East Linton and Area Water Treatment Plant | 93.02% | 100.00% |
| Georgian Bluffs, Township of | Oxenden Distribution System | 100.00% | 99.59% |
| Georgian Bluffs, Township of | Pottawatomi Village Well Supply | 92.11% | 100.00% |
| Georgian Bluffs, Township of | Presquile Water Treatment Plant | 98.50% | 99.19% |
| Georgian Bluffs, Township of | Shallow Lake Well Supply | 90.49% | 99.10% |
| Georgina, Town of | Georgina Water Treatment Plant | 97.72% | 100.00% |
| Georgina, Town of | Keswick Water Treatment Plant | 100.00% | 99.71% |
| Georgina, Town of | Keswick-Sutton Distribution System | 94.59% | 100.00% |
| Goderich, Town of | Goderich Water Treatment Plant | 96.09% | 100.00% |
| Gore Bay, Town of | Gore Bay Water Treatment Plant | 97.24% | 100.00% |
| Gravenhurst, Town of | Gravenhurst Water Treatment Plant | 95.56% | 100.00% |
| Greater Napanee, Town of | A.L. Dafoe Water Treatment Plant | 100.00% | 100.00% |
| Greater Napanee, Town of | Sandhurst Shores Water Treatment Plant | 100.00% | 100.00% |
| Greater Sudbury, City of | Blezard Valley Well Supply | 94.27% | 100.00% |
| Greater Sudbury, City of | Capreol Well Supply | 97.93% | 100.00% |
| Greater Sudbury, City of | Dowling Well Supply | 98.67% | 100.00% |
| Greater Sudbury, City of | Falconbridge (Sudbury) Distribution System | 98.14% | 100.00% |
| Greater Sudbury, City of | Falconbridge Well Supply | 96.20% | 99.77% |
| Greater Sudbury, City of | Garson Well Supply | 96.36% | 99.76% |
| Greater Sudbury, City of | Levack (Sudbury) Distribution System | 100.00% | 100.00% |
| Greater Sudbury, City of | Levack Well Supply | 100.00% | 100.00% |
| Greater Sudbury, City of | Onaping (Sudbury) Distribution System | 100.00% | 100.00% |
| Greater Sudbury, City of | Onaping Well Supply | 100.00% | 99.80% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Greater Sudbury, City of | Sudbury (David St.) Water Treatment Plant | 100.00% | 99.91% |
| Greater Sudbury, City of | Sudbury (Wahnapitei) Water Treatment Plant | 100.00% | 100.00% |
| Greater Sudbury, City of | Vermillion (Inco) Water Treatment Plant | 97.35% | 100.00% |
| Greater Sudbury, City of | Vermillion Distribution System | 100.00% | 100.00% |
| Greenstone, Municipality of | Beardmore Water Treatment Plant | 100.00% | 100.00% |
| Greenstone, Municipality of | Caramat Water Treatment Plant | 71.76% | 98.14% |
| Greenstone, Municipality of | Geraldton Water Treatment Plant | 100.00% | 100.00% |
| Greenstone, Municipality of | Longlac Water Treatment Plant | 92.02% | 100.00% |
| Greenstone, Municipality of | Nakina Well Supply | 88.19% | 99.43% |
| Grey Highlands, Municipality of | Kimberley-Amik-Talisman Well Supply | 86.67% | 100.00% |
| Grey Highlands, Municipality of | Markdale Well Supply | 82.93% | 100.00% |
| Grimsby, Town of | Grimsby Distribution System | 100.00% | 99.85% |
| Grimsby, Town of | Grimsby Water Treatment Plant | 100.00% | 100.00% |
| Guelph, City of | Guelph Well Supply | 100.00% | 99.98% |
| Guelph/Eramosa, Township of | Gazer Mooney Subdivision Distribution System | 100.00% | 100.00% |
| Guelph/Eramosa, Township of | Hamilton Drive Well Supply | 95.12% | 100.00% |
| Guelph/Eramosa, Township of | Rockwood Well Supply | 95.35% | 99.84% |
| Haldimand County | Caledonia/Cayuga (Hamilton Water Treatment Plant) Distribution System | 100.00% | 100.00% |
| Haldimand County | Dunnville Water Treatment Plant | 96.93% | 99.89% |
| Haldimand County | Nanticoke and Trunk Main Water Treatment Plant | 95.44% | 99.87% |
| Halton Hills, Town of | Acton Well Supply | 100.00% | 99.92% |
| Halton Hills, Town of | Georgetown Well Supply | 100.00% | 100.00% |
| Hamilton, City of | Carlisle Well Supply | 100.00% | 100.00% |
| Hamilton, City of | Fifty Road Distribution System | 100.00% | 100.00% |
| Hamilton, City of | Freelton Well Supply | 100.00% | 100.00% |
| Hamilton, City of | Greensville Well Supply | 98.52% | 100.00% |
| Hamilton, City of | Hamilton Water Treatment Plant | 98.88% | 99.83% |
| Hamilton, City of | Lynden Well Supply | 100.00% | 100.00% |
| Hamilton, Township of | Camborne Well Supply | 99.28% | 100.00% |
| Hamilton, Township of | Creighton Heights Well Supply | 98.31% | 99.77% |
| Hamilton, Township of | Hamilton Township Water Agreement Distribution System | 94.83% | 100.00% |
| Havelock-Belmont-Methuen, Township of | Havelock Well Supply | 98.12% | 100.00% |
| Hawkesbury, Town of | Hawkesbury Water Treatment Plant | 98.07% | 100.00% |
| Hearst, Town of | Hearst Water Treatment Plant | 96.67% | 99.54% |
| Highlands East, Municipality of | Cardiff Well Supply | 94.81% | 99.07% |
| Highlands East, Municipality of | Dyno Estates Well Supply | 100.00% | 99.18% |
| Hilton Beach, Village of | Hilton Beach Well Supply | 100.00% | 100.00% |
| Hornepayne, Township of | Hornepayne Well Supply | 95.24% | 99.86% |
| Huntsville, Town of | Fairyview Water Treatment Plant | 100.00% | 99.58% |

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| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Huntsville, Town of | Port Sydney Well Supply | 95.73% | 100.00% |
| Huron East, Municipality of | Brucefield Well Supply | 100.00% | 100.00% |
| Huron East, Municipality of | Brussels Well Supply | 96.51% | 99.82% |
| Huron East, Municipality of | Seaforth Well Supply | 97.74% | 100.00% |
| Huron East, Municipality of | Vanastra Distribution System | 100.00% | 100.00% |
| Huron-Kinloss, Township of | Huronville Subdivision Distribution System | 100.00% | 99.87% |
| Huron-Kinloss, Township of | Lakeshore Well Supply | 94.76% | 99.37% |
| Huron-Kinloss, Township of | Lucknow Well Supply | 98.48% | 99.27% |
| Huron-Kinloss, Township of | Ripley Well Supply | 70.48% | 99.45% |
| Huron-Kinloss, Township of | Whitechurch Well Supply | 72.73% | 100.00% |
| Ignace, Township of | Ignace Well Supply | 96.01% | 99.57% |
| Ingersoll, Town of | Ingersoll Well Supply | 93.14% | 99.92% |
| Innisfil, Town of | Alcona Water Treatment Plant | 92.22% | 99.81% |
| Innisfil, Town of | Churchill Well Supply | 100.00% | 99.14% |
| Innisfil, Town of | Cookstown Well Supply | 94.03% | 100.00% |
| Innisfil, Town of | Goldcrest Well Supply | 92.99% | 100.00% |
| Innisfil, Town of | Golf Haven Well Supply | 97.74% | 98.94% |
| Innisfil, Town of | Innisfil Heights Well Supply | 94.74% | 100.00% |
| Innisfil, Town of | Stroud Well Supply | 90.26% | 98.91% |
| Iroquois Falls, Town of | Iroquois Falls Well Supply | 97.27% | 99.77% |
| Iroquois Falls, Town of | Monteith Correctional Centre Well Supply | 98.47% | 100.00% |
| Iroquois Falls, Town of | Monteith Distribution System | 95.00% | 99.37% |
| Iroquois Falls, Town of | Porquis Junction Well Supply | 100.00% | 100.00% |
| James, Township of | Elk Lake Well Supply | 96.05% | 99.71% |
| Johnson, Township of | Desbarats Water Treatment Plant | 83.33% | 100.00% |
| Kapuskasing, Town of | Kapuskasing Well Supply | 98.48% | 99.85% |
| Kawartha Lakes, City of | Birchpoint Estates Well Supply | 100.00% | 100.00% |
| Kawartha Lakes, City of | Bobcaygeon Water Treatment Plant | 96.55% | 99.81% |
| Kawartha Lakes, City of | Canadiana Shores Well Supply | 96.36% | 100.00% |
| Kawartha Lakes, City of | Fenelon Falls Water Treatment Plant | 100.00% | 99.71% |
| Kawartha Lakes, City of | Janetville Well Supply | 95.77% | 100.00% |
| Kawartha Lakes, City of | King's Bay Well Supply | 100.00% | 100.00% |
| Kawartha Lakes, City of | Kinmount Water Treatment Plant | 95.97% | 98.68% |
| Kawartha Lakes, City of | Lindsay Water Treatment Plant | 100.00% | 99.15% |
| Kawartha Lakes, City of | Manilla Well Supply | 94.64% | 100.00% |
| Kawartha Lakes, City of | Manorview Well Supply | 92.28% | 100.00% |
| Kawartha Lakes, City of | Mariposa Estates Well Supply | 100.00% | 97.18% |
| Kawartha Lakes, City of | Norland Water Treatment Plant | 99.25% | 100.00% |
| Kawartha Lakes, City of | Omemee Well Supply | 96.67% | 100.00% |
| Kawartha Lakes, City of | Pinewood Well Supply | 86.67% | 99.56% |
| Kawartha Lakes, City of | Pleasant Point Well Supply | 95.75% | 100.00% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Kawartha Lakes, City of | Sonya Village Subdivision Well Supply | 99.25% | 100.00% |
| Kawartha Lakes, City of | Southview Estates Water Treatment Plant | 99.22% | 100.00% |
| Kawartha Lakes, City of | Victoria Place Well Supply | 97.79% | 99.76% |
| Kawartha Lakes, City of | Western Trent/Palmina Well Supply | 98.94% | 100.00% |
| Kawartha Lakes, City of | Woodfield Well Supply | 100.00% | 100.00% |
| Kawartha Lakes, City of | Woodville Well Supply | 94.68% | 100.00% |
| Kenora, City of | Kenora Area Water Treatment Plant | 93.61% | 99.65% |
| Killaloe, Hagarty and Richards, Township of | Killaloe Well Supply | 94.95% | 100.00% |
| Killarney, Municipality of | Killarney Water Treatment Plant | 100.00% | 100.00% |
| Kincardine, Municipality of | Kincardine Water Treatment Plant | 98.42% | 99.87% |
| Kincardine, Municipality of | Scott's Point Well Supply | 100.00% | 96.85% |
| Kincardine, Municipality of | Tiverton Well Supply | 98.16% | 98.01% |
| Kincardine, Municipality of | Underwood Well Supply | 100.00% | 97.04% |
| King, Township of | Ansnorveldt Distribution System | 97.62% | 100.00% |
| King, Township of | Ansnorveldt Well Supply | 100.00% | 100.00% |
| King, Township of | King City Distribution System | 97.66% | 100.00% |
| King, Township of | King City Well Supply | 100.00% | 100.00% |
| King, Township of | Nobleton Distribution System | 97.66% | 99.73% |
| King, Township of | Nobleton Well Supply | 100.00% | 100.00% |
| King, Township of | Schomberg Distribution System | 97.79% | 100.00% |
| King, Township of | Schomberg Well Supply | 100.00% | 100.00% |
| Kingston, City of | Cana Well Supply | 95.71% | 100.00% |
| Kingston, City of | Kingston Central Water Treatment Plant | 95.47% | 100.00% |
| Kingston, City of | Kingston West Water Treatment Plant | 98.92% | 100.00% |
| Kingsville, Town of | Kingsville (Union Water Treatment Plant) Distribution System | 100.00% | 99.90% |
| Kingsville, Town of | Union (Essex County) Area Water Treatment Plant | 100.00% | 100.00% |
| Kirkland Lake, Town of | L.J. Sherratt Water Treatment Plant | 100.00% | 99.88% |
| Kitchener, City of | Kitchener Distribution System | 97.66% | 99.94% |
| Kitchener, City of | Mannheim Water Supply System | 95.29% | 99.49% |
| Lake of Bays, Township of | Baysville Birch Glen Water Treatment Plant | 97.56% | 100.00% |
| Lakeshore, Town of | Belle River Water Treatment Plant | 100.00% | 99.80% |
| Lakeshore, Town of | Lakeshore (Tecumseh Water Service Area) Distribution System | 100.00% | 99.60% |
| Lakeshore, Town of | Lakeshore (Union Water Treatment Plant) Distribution System | 100.00% | 100.00% |
| Lakeshore, Town of | Lighthouse Cove Distribution System | 100.00% | 100.00% |
| Lakeshore, Town of | Stoney Point Water Treatment Plant | 100.00% | 99.70% |
| Lambton Shores, Municipality of | Arkona Well Supply | 100.00% | 98.78% |
| Lambton Shores, Municipality of | East Lambton Shores Water Distribution System | 100.00% | 99.93% |
| Lambton Shores, Municipality of | Thedford Water Distribution System | 100.00% | 99.37% |
| Lambton Shores, Municipality of | West Lambton Shores Water Distribution System | 100.00% | 99.85% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Larder Lake, Township of | Larder Lake Well Supply | 100.00% | 99.32% |
| LaSalle, Town of | Town of Lasalle (Windsor) Distribution System | 93.33% | 99.80% |
| Latchford, Town of | Latchford Water Treatment Plant | 100.00% | 100.00% |
| Laurentian Hills, Town of | Chalk River Water Treatment Plant | 99.21% | 99.41% |
| Laurentian Valley, Township of | Laurentian Valley Distribution System | 93.08% | 98.33% |
| Leamington, Municipality of | Leamington (Union Water Treatment Plant) Distribution System | 100.00% | 100.00% |
| Leamington, Municipality of | Leamington (Wheatley) Distribution System | 90.91% | 100.00% |
| Leeds and the Thousand Islands, Township of | Lansdowne Well Supply | 100.00% | 100.00% |
| Lincoln, Town of | Lincoln (Beamsville) (Grimsby Water Treatment Plant) Distribution System | 100.00% | 99.87% |
| Lincoln, Town of | Lincoln (Vineland/Jordan) (Decew Water Treatment Plant) Distribution System | 100.00% | 100.00% |
| London, City of | City of London Distribution System | 98.19% | 99.87% |
| Loyalist, Township of | Bath Water Treatment Plant | 100.00% | 99.80% |
| Loyalist, Township of | Fairfield Water Treatment Plant | 100.00% | 99.91% |
| Lucan Biddulph, Township of | Lucan Biddulph (Lake Huron Area Water Supply) Distribution System | 97.30% | 100.00% |
| Macdonald, Meredith and Aberdeen Additional, Township of | Echo Bay Water Treatment Plant | 89.47% | 100.00% |
| Machin, Township of | Vermilion Bay Water Treatment Plant | 100.00% | 100.00% |
| Madawaska Valley, Township of | Barry's Bay Water Treatment Plant | 96.00% | 100.00% |
| Madoc, Township of | Madoc Well Supply | 89.97% | 100.00% |
| Malahide, Township of | Malahide (Elgin Area Water Supply) Distribution System | 100.00% | 100.00% |
| Malahide, Township of | Port Burwell Secondary Distribution System | 100.00% | 100.00% |
| Manitouwadge, Township of | Manitouwadge Well Supply | 100.00% | 100.00% |
| Mapleton, Township of | Drayton Well Supply | 96.20% | 99.73% |
| Mapleton, Township of | Moorefield Well Supply | 96.00% | 100.00% |
| Marathon, Town of | Marathon Well Supply | 98.04% | 100.00% |
| Markham, Town of | Markham Distribution System | 100.00% | 99.79% |
| Markstay-Warren, Municipality of | Markstay Distribution System | 98.19% | 99.70% |
| Markstay-Warren, Municipality of | Warren Well Supply | 100.00% | 100.00% |
| Marmora and Lake, Municipality of | Deloro Well Supply | 86.25% | 98.95% |
| Marmora and Lake, Municipality of | Marmora Water Treatment Plant | 100.00% | 99.79% |
| Matachewan, Township of | Matachewan Well Supply | 99.20% | 100.00% |
| Mattawa, Town of | Mattawa Well Supply | 87.84% | 100.00% |
| Mattice-Val Côté, Township of | Mattice Water Treatment Plant | 100.00% | 100.00% |
| McDougall, Township of | McDougall Nobel Distribution System | 98.78% | 99.41% |
| McGarry, Township of | Virginiatown-Kearns Well Supply | 100.00% | 98.74% |
| Meaford, Municipality of | Leith Distribution System | 95.89% | 100.00% |
| Meaford, Municipality of | Meaford Public Utilities Commission Water Treatment Plant | 99.21% | 100.00% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Merrickville-Wolford, Village of | Merrickville Well Supply | 100.00% | 100.00% |
| Middlesex Centre, Municipality of | Birr Well Supply | 95.14% | 100.00% |
| Middlesex Centre, Municipality of | Delaware Distribution System | 88.82% | 100.00% |
| Middlesex Centre, Municipality of | Kilworth Heights Subdivision Well Supply | 91.61% | 100.00% |
| Middlesex Centre, Municipality of | Melrose Well Supply | 96.34% | 100.00% |
| Middlesex Centre, Municipality of | Middlesex Centre Distribution System | 100.00% | 100.00% |
| Midland, Town of | Midland Well Supply | 100.00% | 100.00% |
| Milton, Town of | Campbellville Well Supply | 100.00% | 100.00% |
| Milton, Town of | Milton Well Supply | 100.00% | 99.77% |
| Minden Hills, Township of | Lutterworth Pines Trailer Park Well Supply | 82.95% | 98.81% |
| Minden Hills, Township of | Minden Well Supply | 100.00% | 100.00% |
| Minto, Town of | Clifford Well Supply | 100.00% | 100.00% |
| Minto, Town of | Harriston Well Supply | 96.34% | 100.00% |
| Minto, Town of | Minto Pines Subdivision Well Supply | 98.08% | 100.00% |
| Minto, Town of | Palmerston Well Supply | 100.00% | 99.90% |
| Mississauga, City of | South Peel (Lakeview) Water Treatment Plant | 97.59% | 99.92% |
| Mississauga, City of | South Peel (Lorne Park) Water Treatment Plant | 99.25% | 99.88% |
| Mississippi Mills, Town of | Mississippi Mills Well Supply | 97.77% | 100.00% |
| Mono, Town of | Cardinal Woods Subdivision Well Supply | 100.00% | 100.00% |
| Mono, Town of | Island Lake Well Supply | 100.00% | 100.00% |
| Montague, Township of | Montague Distribution System | 96.80% | 100.00% |
| Moonbeam, Township of | Moonbeam Well Supply | 100.00% | 100.00% |
| Moosonee, Town of | Moosonee Water Treatment Plant | 90.91% | 99.36% |
| Morris-Turnberry, Municipality of | Belgrave Well Supply (Formerly McCrae Street (Belgrave) Well Supply and Jane Street (Belgrave) Well Supply systems) | 100.00% | 99.51% |
| Mulmur, Township of | Mansfield Well Supply | 96.55% | 100.00% |
| Muskoka Lakes, Township of | Bala Water Treatment Plant | 100.00% | 99.81% |
| Muskoka Lakes, Township of | Port Carling (Ferndale Road) Water Treatment Plant | 100.00% | 100.00% |
| Nairn and Hyman, Township of | Nairn Centre Water Treatment Plant | 98.86% | 99.30% |
| New Tecumseth, Town of | Alliston Well Supply | 100.00% | 99.96% |
| New Tecumseth, Town of | Tottenham Well Supply | 100.00% | 99.39% |
| Newbury, Village of | Newbury (West Elgin Area Water Supply) Distribution System | 97.27% | 100.00% |
| Newmarket, Town of | Newmarket Distribution System | 100.00% | 99.88% |
| Newmarket, Town of | Newmarket Well Supply | 100.00% | 100.00% |
| Niagara Falls, City of | Niagara Falls Distribution System | 100.00% | 99.88% |
| Niagara Falls, City of | Niagara Falls Water Treatment Plant | 99.22% | 100.00% |
| Niagara-on-the-Lake, Town of | Bevan Heights Distribution System | 100.00% | 100.00% |
| Niagara-on-the-Lake, Town of | Niagara-on-the-Lake Distribution System | 100.00% | 99.71% |
| Nipigon, Township of | Nipigon Water Treatment Plant | 94.23% | 99.82% |
| Norfolk County | Delhi Water Supply System | 100.00% | 100.00% |

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| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Norfolk County | Port Dover Water Treatment Plant | 100.00% | 100.00% |
| Norfolk County | Port Rowan Water Treatment Plant | 100.00% | 99.30% |
| Norfolk County | Simcoe Well Supply | 100.00% | 99.92% |
| Norfolk County | Waterford Well Supply | 100.00% | 99.81% |
| North Bay, City of | North Bay Water Treatment Plant | 99.23% | 99.96% |
| North Dumfries, Township of | Ayr Well Supply | 100.00% | 100.00% |
| North Dumfries, Township of | Branchton Well Supply | 100.00% | 99.66% |
| North Dumfries, Township of | Lloyd Brown Distribution System | 100.00% | 100.00% |
| North Dumfries, Township of | Roseville Well Supply | 100.00% | 99.67% |
| North Dundas, Township of | Chesterville Well Supply | 100.00% | 100.00% |
| North Dundas, Township of | Winchester Well Supply | 100.00% | 99.88% |
| North Glengarry, Township of | Alexandria Water Treatment Plant | 100.00% | 100.00% |
| North Glengarry, Township of | Glen Robertson Well Supply | 94.72% | 100.00% |
| North Grenville, Municipality of | Kemptville Well Supply | 88.37% | 99.56% |
| North Huron, Township of | Blyth Well Supply | 100.00% | 99.41% |
| North Huron, Township of | Humphrey Subdivision/Belgrave Well Supply | 100.00% | 100.00% |
| North Huron, Township of | Wingham Well Supply | 97.56% | 100.00% |
| North Middlesex, Municipality of | North Middlesex (Lake Huron Area Water Supply) Distribution System | 90.58% | 99.95% |
| North Perth, Municipality of | Atwood Well Supply | 97.42% | 100.00% |
| North Perth, Municipality of | Gowanstown Subdivision Well Supply | 98.85% | 100.00% |
| North Perth, Municipality of | Listowel Well Supply | 96.39% | 100.00% |
| North Perth, Municipality of | Molesworth Well Supply | 95.08% | 100.00% |
| North Stormont, Township of | Crysler Well Supply | 100.00% | 99.75% |
| North Stormont, Township of | Finch Well Supply | 100.00% | 100.00% |
| North Stormont, Township of | Moose Creek Well Supply | 98.84% | 100.00% |
| Northeastern Manitoulin and The Islands, Town of | Little Current Water Treatment Plant | 98.85% | 99.81% |
| Northeastern Manitoulin and The Islands, Town of | Sheguiandah Water Treatment Plant | 100.00% | 100.00% |
| Northern Bruce Peninsula, Municipality of | Lion's Head Water Treatment Plant | 100.00% | 100.00% |
| Norwich, Township of | Norwich Well Supply | 100.00% | 100.00% |
| Norwich, Township of | Otterville-Springford Well Supply | 94.64% | 100.00% |
| Oakville, Town of | Oakville Water Treatment Plant | 100.00% | 99.79% |
| Oakville, Town of | South Halton Water Distribution System | 100.00% | 99.61% |
| Oil Springs, Village of | Oil Springs Water Distribution System | 100.00% | 100.00% |
| Oliver Paipoonge, Municipality of | Rosslyn Village Subdivision Well Supply | 92.31% | 100.00% |
| Opasatika, Township of | Opasatika Well Supply | 100.00% | 98.78% |
| Orangeville, Town of | Orangeville Well Supply | 100.00% | 99.97% |
| Orillia, City of | Orillia Water Supply System | 95.59% | 100.00% |
| Oro-Medonte, Township of | Canterbury Subdivision Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Cedar Brook Subdivision Well Supply | 100.00% | 100.00% |

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| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Oro-Medonte, Township of | Craighurst Well Supply | 100.00% | 98.73% |
| Oro-Medonte, Township of | Harbourwood Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Horseshoe Valley Subdivision Well Supply | 100.00% | 99.73% |
| Oro-Medonte, Township of | Maplewood Estates Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Medonte Hills Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Robin Crest Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Shanty Bay Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Sugar Bush Well Supply | 100.00% | 100.00% |
| Oro-Medonte, Township of | Warminster Well Supply | 100.00% | 100.00% |
| Oshawa, City of | Oshawa Water Treatment Plant | 100.00% | 99.78% |
| Otonabee-South Monaghan, Township of | Elgeti and Crystal Springs Subdivisions Well Supply | 100.00% | 100.00% |
| Otonabee-South Monaghan, Township of | Keene Heights Subdivision Well Supply | 99.19% | 100.00% |
| Ottawa, City of | Britannia Water Treatment Plant | 100.00% | 99.89% |
| Ottawa, City of | Carp Well Supply | 93.33% | 100.00% |
| Ottawa, City of | Kings Park Well Supply | 100.00% | 100.00% |
| Ottawa, City of | Lemieux Island Water Treatment Plant | 100.00% | 99.87% |
| Ottawa, City of | Munster Hamlet Well Supply | 97.10% | 100.00% |
| Ottawa, City of | Vars Well Supply | 100.00% | 100.00% |
| Owen Sound, City of | Owen Sound (Richard H. Neath) Water Treatment Plant | 89.69% | 99.27% |
| Parry Sound, Town of | Tony Agnello Water Treatment Plant (Formerly Parry Sound Water Treatment Plant) | 96.64% | 100.00% |
| Pelham, Town of | Pelham Distribution System | 100.00% | 100.00% |
| Pembroke, City of | Pembroke Water Treatment Plant | 100.00% | 99.68% |
| Penetanguishene, Town of | Lepage Subdivision (Penetanguishene) Well Supply | 100.00% | 100.00% |
| Penetanguishene, Town of | Payette (Penetanguishene) Well Supply | 100.00% | 99.86% |
| Perth East, Township of | Milverton Well Supply | 96.39% | 100.00% |
| Perth East, Township of | Shakespeare (Miller Ave.) Well Supply | 99.16% | 100.00% |
| Perth South, Township of | Sebringville (Black Creek Estates) Well Supply | 97.28% | 100.00% |
| Perth South, Township of | St. Pauls Well Supply | 98.44% | 100.00% |
| Perth, Town of | Perth Water Treatment Plant | 98.02% | 100.00% |
| Petawawa, Town of | Petawawa Water Treatment Plant | 98.56% | 99.65% |
| Peterborough, City of | Peterborough Water Treatment Plant | 100.00% | 100.00% |
| Petrolia, Town of | Town of Petrolia Bright's Grove Water Treatment Plant | 99.18% | 100.00% |
| Pickle Lake, Township of | Pickle Lake Well Supply | 99.18% | 100.00% |
| Plympton-Wyoming, Town of | Plympton-Wyoming (Lambton Area Water Supply) Distribution System | 85.71% | 100.00% |
| Point Edward, Village of | Point Edward (Lambton Area Water Supply) Distribution System | 100.00% | 100.00% |
| Port Colborne, City of | Port Colborne Distribution System | 100.00% | 99.67% |
| Port Colborne, City of | Port Colborne Water Treatment Plant | 100.00% | 100.00% |
| Port Hope, Municipality of | Port Hope (New) Water Treatment Plant | 100.00% | 100.00% |
| Powassan, Municipality of | Powassan Well Supply | 95.71% | 100.00% |

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| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Prescott, Town of | Prescott Water Treatment Plant | 100.00% | 100.00% |
| Prince Edward County, City of | Ameliasburgh Hamlet Water Treatment Plant | 100.00% | 100.00% |
| Prince Edward County, City of | Consecon/Carrying Place Distribution System | 100.00% | 99.02% |
| Prince Edward County, City of | Fenwood Gardens/Rossmore Distribution System | 100.00% | 100.00% |
| Prince Edward County, City of | Peats Point Subdivision Well Supply | 100.00% | 100.00% |
| Prince Edward County, City of | Picton Water Treatment Plant | 87.64% | 99.85% |
| Prince Edward County, City of | Wellington Water Treatment Plant | 100.00% | 100.00% |
| Quinte West, City of | Batawa Water Treatment Plant | 100.00% | 99.76% |
| Quinte West, City of | Bayside Water Treatment Plant | 85.48% | 100.00% |
| Quinte West, City of | Frankford Water Treatment Plant | 100.00% | 100.00% |
| Quinte West, City of | Trenton Water Treatment Plant | 99.21% | 100.00% |
| Rainy River, Town of | Rainy River Water Treatment Plant | 98.24% | 100.00% |
| Ramara, Township of | Bayshore Village Subdivision Well Supply | 99.19% | 100.00% |
| Ramara, Township of | Brechin & Lagoon City Water Treatment Plant | 100.00% | 99.42% |
| Ramara, Township of | Davy Drive Subdivision Well Supply | 99.21% | 100.00% |
| Ramara, Township of | Park Lane Subdivision Well Supply | 100.00% | 100.00% |
| Ramara, Township of | Somerset/Knob Hill Water Distribution System | 100.00% | 98.65% |
| Ramara, Township of | South Ramara Water Treatment Plant | 100.00% | 100.00% |
| Ramara, Township of | Val Harbour Subdivision Well Supply | 100.00% | 100.00% |
| Red Lake, Municipality of | Golden Ward Water Treatment Plant | 100.00% | 100.00% |
| Red Lake, Municipality of | Madsen Water Treatment Plant | 100.00% | 100.00% |
| Red Lake, Municipality of | Red Lake Water Treatment Plant | 98.42% | 100.00% |
| Red Rock, Township of | Red Rock Water Treatment Plant | 95.72% | 99.70% |
| Renfrew, Town of | Renfrew Water Treatment Plant | 99.24% | 100.00% |
| Richmond Hill, Town of | Richmond Hill Distribution System | 100.00% | 99.94% |
| Russell, Township of | Embrun-Russell-Marionville Well Supply | 100.00% | 100.00% |
| Sables-Spanish Rivers, Township of | Massey Water Treatment Plant | 100.00% | 100.00% |
| Sarnia, City of | Lambton Area Water Supply System | 98.42% | 100.00% |
| Sarnia, City of | Sarnia (Lambton Area Water Supply) Distribution System | 98.21% | 100.00% |
| Saugeen Shores, Town of | Port Elgin Water Treatment Plant | 97.44% | 99.84% |
| Saugeen Shores, Town of | Southampton Water Treatment Plant | 100.00% | 100.00% |
| Sault Ste. Marie, City of | Sault Ste. Marie Water Supply System | 94.50% | 100.00% |
| Schreiber, Township of | Schreiber Water Treatment Plant | 80.71% | 99.76% |
| Scugog, Township of | Blackstock Well Supply | 100.00% | 99.55% |
| Scugog, Township of | Greenbank Well Supply | 100.00% | 100.00% |
| Scugog, Township of | Port Perry Well Supply | 100.00% | 100.00% |
| Severn, Township of | Bass Lake Woodlands Well Supply | 100.00% | 99.43% |
| Severn, Township of | Coldwater Well Supply | 99.24% | 99.78% |
| Severn, Township of | Sandcastle Estates Water Treatment Plant | 94.87% | 100.00% |
| Severn, Township of | Severn Estates Well Supply | 100.00% | 100.00% |

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| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Severn, Township of | Washago Water Treatment Plant | 98.41% | 99.50% |
| Severn, Township of | West Shore Water Treatment Plant | 97.55% | 100.00% |
| Shelburne, Town of | Shelburne Well Supply | 90.23% | 100.00% |
| Sioux Lookout, Municipality of | Hudson Water Treatment Plant | 97.74% | 99.55% |
| Sioux Lookout, Municipality of | Sioux Lookout Urban Water Treatment Plant | 98.02% | 100.00% |
| Smith-Ennismore-Lakefield, Township of | Lakefield Water Treatment Plant | 100.00% | 100.00% |
| Smith-Ennismore-Lakefield, Township of | Woodland Acres Subdivision Distribution System | 100.00% | 100.00% |
| Smiths Falls, Town of | Smiths Falls Water Treatment Plant | 98.48% | 98.69% |
| Smooth Rock Falls, Town of | Smooth Rock Falls Water Treatment Plant | 89.47% | 100.00% |
| South Bruce Peninsula, Town of | Cammidge-Collins Well Supply | 92.96% | 100.00% |
| South Bruce Peninsula, Town of | Forbes Subdivision Well Supply | 95.79% | 100.00% |
| South Bruce Peninsula, Town of | Foreman Well Supply | 97.92% | 100.00% |
| South Bruce Peninsula, Town of | Gremik Subdivision Well Supply | 98.89% | 100.00% |
| South Bruce Peninsula, Town of | Huronwoods Well Supply | 96.54% | 100.00% |
| South Bruce Peninsula, Town of | Oliphant Well Supply (Formerly Fiddlehead Subdivision Well Supply and Cammidge-Collins Well Supply ) | 98.86% | 96.97% |
| South Bruce Peninsula, Town of | Robins Well Supply | 96.34% | 100.00% |
| South Bruce Peninsula, Town of | Thomson Subdivision Well Supply | 97.37% | 97.84% |
| South Bruce Peninsula, Town of | Trask Well Supply | 97.14% | 94.70% |
| South Bruce Peninsula, Town of | Wiarton Water Treatment Plant | 93.29% | 100.00% |
| South Bruce Peninsula, Town of | Winburk Subdivision Well Supply | 92.75% | 100.00% |
| South Bruce, Municipality of | Mildmay Well Supply | 100.00% | 99.48% |
| South Bruce, Municipality of | Teeswater Well Supply | 91.67% | 100.00% |
| South Dundas, Township of | South Dundas Regional Water Treatment Plant | 97.97% | 100.00% |
| South Frontenac, Township of | Sydenham Water Treatment Plant | 99.28% | 99.05% |
| South Glengarry, Township of | Glen Walter Water Treatment Plant | 100.00% | 100.00% |
| South Glengarry, Township of | Lancaster Water Treatment Plant | 94.31% | 100.00% |
| South Glengarry, Township of | Redwood Estates Well Supply | 97.76% | 99.48% |
| South Huron, Municipality of | Exeter Water Supply System | 98.53% | 99.64% |
| South Huron, Municipality of | Huron Park Distribution System | 95.89% | 100.00% |
| South Huron, Municipality of | Lake Huron Primary Area Water Supply | 97.03% | 99.71% |
| South Huron, Municipality of | South Huron (Lake Huron Area Water Supply) Distribution System | 97.86% | 100.00% |
| South River, Village of | South River Water Treatment Plant | 96.68% | 100.00% |
| South Stormont, Township of | Long Sault/Ingleside Regional Water Treatment Plant | 97.30% | 99.57% |
| South Stormont, Township of | Newington Well Supply | 98.90% | 100.00% |
| South Stormont, Township of | St. Andrews/Rosedale Terrace Distribution System | 100.00% | 100.00% |
| Southgate, Township of | Dundalk Well Supply | 100.00% | 99.56% |
| Southwest Middlesex, Municipality of | Southwest Middlesex (West Elgin Area Water Supply) Distribution System | 100.00% | 100.00% |
| South-West Oxford, Township of | Beachville-Loweville Subdivision Well Supply | 100.00% | 100.00% |
| South-West Oxford, Township of | Brownsville Well Supply | 94.57% | 99.71% |

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| South-West Oxford, Township of | Dereham Centre Well Supply | 100.00% | 100.00% |
| South-West Oxford, Township of | Mount Elgin Well Supply | 100.00% | 100.00% |
| Southwold, Township of | Southwold (Elgin Area Water Supply) Distribution System | 100.00% | 100.00% |
| Spanish, Town of | Spanish Well Supply | 98.98% | 99.64% |
| Springwater, Township of | Anten Mills Well Supply | 100.00% | 100.00% |
| Springwater, Township of | Del Trend Subdivision Well Supply | 100.00% | 99.70% |
| Springwater, Township of | Elmvale Well Supply | 100.00% | 99.78% |
| Springwater, Township of | Hillsdale Well Supply | 100.00% | 100.00% |
| Springwater, Township of | Midhurst Well Supply | 100.00% | 99.71% |
| Springwater, Township of | Minesing Well Supply | 100.00% | 98.95% |
| Springwater, Township of | Phelpston Well Supply | 100.00% | 100.00% |
| Springwater, Township of | Snow Valley Highlands Well Supply | 98.92% | 99.85% |
| Springwater, Township of | Sunnidale Road Well Supply | 98.97% | 88.57% |
| Springwater, Township of | Vespra Downs Subdivision Well Supply | 100.00% | 100.00% |
| St. Catharines, City of | St. Catharines (Decew) Water Treatment Plant | 100.00% | 100.00% |
| St. Catharines, City of | St. Catharines Distribution System | 100.00% | 99.78% |
| St. Clair, Township of | St. Clair Township (Lambton Area Water Supply) Distribution System | 100.00% | 100.00% |
| St. Joseph, Township of | Richards Landing Well Supply | 99.27% | 100.00% |
| St. Marys, Town of | St. Marys Well Supply | 97.65% | 99.90% |
| St. Thomas, City of | St. Thomas (Elgin Area Water Supply) Distribution System | 100.00% | 99.48% |
| St. Thomas, City of | St. Thomas Secondary Area Water Supply | 100.00% | 99.75% |
| Stirling-Rawdon, Township of | Stirling Well Supply | 89.35% | 100.00% |
| Stratford, City of | Stratford Well Supply | 99.28% | 99.21% |
| Strathroy-Caradoc, Township of | Mount Brydges Well Supply | 86.59% | 99.61% |
| Strathroy-Caradoc, Township of | Strathroy Distribution System | 97.58% | 99.75% |
| Tay, Township of | Rope Subdivision Water Treatment Plant | 99.24% | 98.61% |
| Tay, Township of | Victoria Harbour Water Treatment Plant | 95.42% | 99.73% |
| Tay, Township of | Waubaushene Water Treatment Plant | 99.23% | N/A* |
| Tecumseh, Town of | Tecumseh (Windsor Water Treatment Plant) Distribution System | 100.00% | 99.91% |
| Tehkummah, Township of | South Baymouth Water Treatment Plant | 100.00% | 100.00% |
| Temagami, Municipality of | Temagami North Water Treatment Plant | 94.90% | 100.00% |
| Temagami, Municipality of | Temagami South Water Treatment Plant | 96.61% | 100.00% |
| Temiskaming Shores, City of | Dymond Well Supply | 97.08% | 99.77% |
| Temiskaming Shores, City of | Haileybury (Lake Timiskaming) Water Treatment Plant | 94.78% | 100.00% |
| Temiskaming Shores, City of | New Liskeard Well Supply | 92.64% | 100.00% |
| Terrace Bay, Township of | Terrace Bay Water Treatment Plant | 97.20% | 99.76% |
| Thames Centre, Municipality of | Dorchester Well Supply | 96.00% | 100.00% |
| Thames Centre, Municipality of | Thorndale Well Supply | 92.41% | 99.49% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| The Blue Mountains, Town of | Thornbury Water Treatment Plant | 96.67% | 99.78% |
| The Nation, Municipality of | Limoges Well Supply | 100.00% | 100.00% |
| The Nation, Municipality of | St. Isidore Well Supply | 100.00% | 99.41% |
| The North Shore, Township of | Pronto East Subdivision Water Treatment Plant | 98.44% | 99.07% |
| The North Shore, Township of | Serpent River (The North Shore Township) Water Treatment Plant | 100.00% | 97.18% |
| Thessalon, Town of | Thessalon Water Treatment Plant | 100.00% | 99.70% |
| Thorold, City of | Thorold (Port Robinson Area) Distribution System | 100.00% | 100.00% |
| Thorold, City of | Thorold (South End of Thorold) Distribution System | 100.00% | 100.00% |
| Thorold, City of | Thorold Distribution System | 100.00% | 100.00% |
| Thunder Bay, City of | Thunder Bay (Bare Point Road) Water Treatment Plant | 95.09% | 99.78% |
| Thunder Bay, City of | Thunder Bay (Loch Lomond) Water Treatment Plant | 91.57% | 99.78% |
| Tillsonburg, Town of | Tillsonburg Well Supply | 94.18% | 100.00% |
| Timmins, City of | Timmins (Mattagami) Water Treatment Plant | 92.75% | 99.61% |
| Timmins, City of | Timmins (Shaw Township) Well Supply | 92.11% | N/A* |
| Tiny, Township of | Bluewater Well Supply | 84.51% | 100.00% |
| Tiny, Township of | Cook's Lake Well Supply | 94.03% | 100.00% |
| Tiny, Township of | Georgian Bay Estates Well Supply | 95.35% | 99.70% |
| Tiny, Township of | Georgian Highlands Well Supply | 94.94% | 100.00% |
| Tiny, Township of | Georgian Sands Well Supply | 95.18% | 100.00% |
| Tiny, Township of | Lafontaine Well Supply | 100.00% | 100.00% |
| Tiny, Township of | Lefaive Well Supply | 100.00% | 100.00% |
| Tiny, Township of | Pennorth Well Supply | 95.18% | 100.00% |
| Tiny, Township of | Perkinsfield Well Supply | 90.36% | 99.57% |
| Tiny, Township of | Rayko Water System Well Supply | 94.29% | 100.00% |
| Tiny, Township of | Sand Castle Well Supply | 94.03% | 100.00% |
| Tiny, Township of | Sawlog Bay Well Supply | 94.03% | 100.00% |
| Tiny, Township of | Tee Pee Point Well Supply | 94.94% | 100.00% |
| Tiny, Township of | Thunder Bay Well Supply | 94.94% | 100.00% |
| Tiny, Township of | Vanier Woods Well Supply | 94.03% | 100.00% |
| Tiny, Township of | Whip-Poor-Will II Well Supply | 90.14% | 100.00% |
| Tiny, Township of | Woodland Beach Well Supply | 95.18% | 100.00% |
| Tiny, Township of | Wyevale Well Supply | 94.37% | 100.00% |
| Toronto, City of | F.J. Horgan Water Treatment Plant | 95.76% | 99.97% |
| Toronto, City of | Toronto (Island) Water Treatment Plant | 96.08% | 99.93% |
| Toronto, City of | Toronto (R.C. Harris) Water Treatment Plant | 94.26% | 99.83% |
| Toronto, City of | Toronto (R.C. Harris) Water Treatment Plant (Toronto Distribution System) | 100.00% | 99.83% |
| Toronto, City of | Toronto (R.L. Clark) Water Treatment Plant | 100.00% | 99.85% |
| Trent Hills, Municipality of | Campbellford Water Treatment Plant | 100.00% | 99.74% |
| Trent Hills, Municipality of | Hastings Water Treatment Plant | 100.00% | 99.81% |

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## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Trent Hills, Municipality of | Warkworth Water Treatment Plant | 100.00% | 100.00% |
| Tweed, Municipality of | Tweed Well Supply | 92.13% | 100.00% |
| Uxbridge, Township of | Uxbridge Well Supply | 100.00% | 100.00% |
| Val Rita-Harty, Township of | Val Rita Well Supply | 100.00% | 100.00% |
| Vaughan, City of | Kleinburg Distribution System | 100.00% | 100.00% |
| Vaughan, City of | Kleinburg Well Supply | 100.00% | 100.00% |
| Vaughan, City of | Vaughan (Toronto Water) Distribution System | 100.00% | 99.81% |
| Vaughan, City of | York Distribution System | 100.00% | 100.00% |
| Warwick, Township of | Warwick (Lambton Area Water Supply) Distribution System | 97.41% | 100.00% |
| Wasaga Beach, Town of | Wasaga Beach Well Supply | 100.00% | 99.91% |
| Waterloo, City of | Kitchener Well Supply | 98.94% | 99.89% |
| Waterloo, City of | Maryhill Village Heights Well Supply | 98.81% | 100.00% |
| Waterloo, City of | Waterloo Distribution System | 94.53% | 100.00% |
| Waterloo, City of | Waterloo Well Supply | 98.50% | 99.89% |
| Wawa, Municipality of | Michipicoten River Village Well Supply | 100.00% | 100.00% |
| Wawa, Municipality of | Wawa Water Treatment Plant | 96.59% | 99.49% |
| Welland, City of | Welland Distribution System | 100.00% | 99.85% |
| Welland, City of | Welland Water Treatment Plant | 98.76% | 100.00% |
| Wellesley, Township of | Linwood Well Supply | 100.00% | 100.00% |
| Wellesley, Township of | St. Clements Well Supply | 100.00% | 100.00% |
| Wellesley, Township of | Wellesley Well Supply | 100.00% | 100.00% |
| Wellington North, Township of | Arthur Well Supply | 90.67% | 99.83% |
| Wellington North, Township of | Mount Forest Well Supply | 82.54% | 100.00% |
| West Elgin, Municipality of | West Elgin Water Treatment Plant | 100.00% | 100.00% |
| West Grey, Municipality of | Durham Well Supply | 96.51% | 100.00% |
| West Grey, Municipality of | Neustadt Well Supply | 97.93% | 100.00% |
| West Lincoln, Township of | Smithville (Grimsby Water Treatment Plant) Distribution System | 100.00% | 100.00% |
| West Nipissing, Municipality of | Sturgeon Falls Water Treatment Plant | 93.33% | 100.00% |
| West Nipissing, Municipality of | Verner Water Treatment Plant | 95.56% | 100.00% |
| West Perth, Municipality of | Mitchell Well Supply | 98.89% | 99.52% |
| Westport, Village of | Westport Well Supply | 97.39% | 99.69% |
| Whitby, Town of | Whitby Water Treatment Plant | 99.30% | 99.96% |
| Whitchurch-Stouffville, Town of | Ballantrae/Musselman's Well Supply | 100.00% | 100.00% |
| Whitchurch-Stouffville, Town of | Ballantrae/Musselman Lake Distribution System | 100.00% | 99.44% |
| Whitchurch-Stouffville, Town of | Stouffville Distribution System | 100.00% | 99.60% |
| Whitchurch-Stouffville, Town of | Stouffville Well Supply | 100.00% | 100.00% |
| White River, Township of | White River Water Supply System | 95.63% | 100.00% |
| Whitewater Region, Township of | Beachburg Well Supply | 90.24% | 99.49% |
| Whitewater Region, Township of | Cobden Water Treatment Plant | 94.68% | 99.76% |

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

## APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

| Municipal Location (Municipality Where the Drinking Water System is Located) | Drinking Water System Name | 2007-08 Inspection Rating | 2007-08 Water Quality (% of Tests Meeting Standards) |
|---|---|---|---|
| Whitewater Region, Township of | Haley Well Supply | 96.33% | 100.00% |
| Wilmot, Township of | Foxboro Well Supply | 100.00% | 100.00% |
| Wilmot, Township of | Mannheim Village Distribution System | 100.00% | 100.00% |
| Wilmot, Township of | Mannheim Village Well Supply | 100.00% | 100.00% |
| Wilmot, Township of | New Dundee Distribution System | 100.00% | 100.00% |
| Wilmot, Township of | New Dundee Well Supply | 100.00% | 100.00% |
| Wilmot, Township of | New Hamburg-Baden Distribution System | 100.00% | 99.63% |
| Wilmot, Township of | New Hamburg-Baden Well Supply | 95.49% | 100.00% |
| Wilmot, Township of | Shingletown Distribution System | 100.00% | 99.51% |
| Wilmot, Township of | Shingletown Well Supply | 100.00% | 100.00% |
| Wilmot, Township of | St. Agatha Distribution System | 100.00% | 100.00% |
| Wilmot, Township of | St. Agatha Well Supply | 100.00% | 100.00% |
| Wilmot, Township of | St. Agatha/Sararas Well Supply | 100.00% | 100.00% |
| Wilmot, Township of | St. Agatha/Swartzentruber Well Supply | 100.00% | 100.00% |
| Windsor, City of | Windsor Water Treatment Plant | 98.28% | 99.98% |
| Woodstock, City of | Woodstock Well Supply | 93.60% | 99.84% |
| Woolwich, Township of | Breslau (Elroy Acres) Distribution System | 95.49% | 100.00% |
| Woolwich, Township of | Conestoga Plains Distribution System | 98.28% | 100.00% |
| Woolwich, Township of | Conestogo Golf Distribution System | 100.00% | 100.00% |
| Woolwich, Township of | Conestogo Golf Well Supply | 98.40% | 100.00% |
| Woolwich, Township of | Conestogo Plains Well Supply | 99.14% | 100.00% |
| Woolwich, Township of | Heidelberg (Woolwich Township) Distribution System | 94.57% | 99.69% |
| Woolwich, Township of | Heidelberg Well Supply | 99.29% | 99.80% |
| Woolwich, Township of | Maryhill Distribution System | 97.66% | 100.00% |
| Woolwich, Township of | Maryhill Village Heights Distribution System | 100.00% | 99.56% |
| Woolwich, Township of | Maryhill Well Supply | 94.81% | 100.00% |
| Woolwich, Township of | St. Jacobs/Elmira Distribution System | 97.74% | 99.67% |
| Woolwich, Township of | West Montrose Distribution System | 100.00% | 100.00% |
| Woolwich, Township of | West Montrose Well Supply | 100.00% | 100.00% |
| Zorra, Township of | Embro Well Supply | 88.73% | 100.00% |
| Zorra, Township of | Lakeside Well Supply | 94.37% | 100.00% |
| Zorra, Township of | Thamesford Well Supply | 99.32% | 100.00% |

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

**APPENDIX 3-A-1: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of an Inspection**

| Drinking Water System Owner | Drinking Water System Name | Date Order Issued | Order Synopsis |
|---|---|---|---|
| Chapleau, The Corporation of the Township of | Chapleau Water Treatment Plant | December 3, 2007 | • Ensure that operations and maintenance manuals are up-to-date and readily available<br>• Provide procedures for the operation and maintenance of monitoring equipment.<br>• Ensure that drinking water samples are taken at an appropriate location.<br>• Ensure that water quality monitoring equipment is installed at approved locations<br>• Ensure that chemical tanks are equipped with the appropriately sized metering pumps. |
| Cobalt, The Corporation of the Town of | Cobalt Water Treatment Plant | March 28, 2008 | • Ensure that chemical sampling and testing is conducted<br>• Review monthly turbidity data to verify compliance. |
| Galway-Cavendish-Harvey, The Corporation of the Township of | Buckhorn Lake Estates Well Supply | February 4, 2008 | • Ensure that a chlorine analyzer be located in the appropriate location<br>• Ensure that turbidity measuring devices be installed in the appropriate location<br>• Ensure that the contingency/emergency plan meets Ministry of the Environment requirements<br>• Update operations and maintenance manuals<br>• Ensure that process flow diagrams for the treatment system be on site. |
| Gananoque, The Corporation of the Town of | James W. King Water Treatment Plant | January 30, 2008 | • Replace the existing sand filter with granulated activated carbon media and update the physical description of the drinking water system<br>• Provide an action plan to ensure that all microbiological sampling and testing requirements will be met<br>• Provide an action plan to address the required corrective actions when an adverse drinking water test result(s) is received<br>• Provide an action plan to ensure that primary disinfection is achieved and filter turbidity is sampled and tested. |
| Haldimand, The Corporation of the County of | Nanticoke and Trunk Main Water Treatment Plant | April 11, 2008 | • Modify filter operation to ensure effective backwashing of all units<br>• Update procedures related to filtration unit operation to be consistent with Ministry of the Environment criteria<br>• Retain a qualified professional to evaluate filter operation for the purpose of improving the existing operations manual, associated equipment and confirm alarm set-points<br>• Update the operating procedures to allow for more timely identification of adverse conditions associated with filter operation<br>• Update the computer control system to provide better information to the operators related to filter operation<br>• Provide training to all operators on all changes made as a result of improvements to filter operations. |

**APPENDIX 3-A-1: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of an Inspection**

| Drinking Water System Owner | Drinking Water System Name | Date Order Issued | Order Synopsis |
|---|---|---|---|
| Haldimand, The Corporation of the County of | Dunnville Water Treatment Plant | May 23, 2008 | • Update procedures related to filtration unit operation to be consistent with Ministry criteria<br>• Update the operating procedures to allow for more timely identification of adverse conditions associated with filter operation<br>• Update the computer control system to provide better information to the operators related to filter operation<br>• Provide training to all operators on all changes made as a result of improvements to filter operations. |
| Havelock-Belmont-Methuen, The Corporation of the Township of | Havelock Well Supply | August 29, 2007 | • Provide the required logbooks and information as requested by the Provincial Officer. |
| Innisfil, The Corporation of the Town of | Alcona Water Treatment Plant | August 28, 2007 | • Ensure that continuous monitoring equipment is operated and performs alarm notification or shut down sequences as required. |
| Johnson, The Corporation of the Township of | Desbarats Water Treatment Plant | December 4, 2007 | • Ensure that primary and secondary disinfection is achieved at all times<br>• Ensure that the drinking water system is maintained in a fit state of repair while in service<br>• Ensure an appropriately trained operator is designated as the Overall Responsible Operator and Operator in Charge. |
| Sault Ste. Marie, The Corporation of the City of | Sault Ste. Marie Water Supply System | February 28, 2008 | • Submit an application for approval to upgrade each of the four well pumping stations. |
| Timmins, The Corporation of the City of | Timmins (Shaw Township) Well Supply | October 3, 2007 | • Provide the required logbooks and information pertaining to the operation and maintenance of the drinking water system. |

**APPENDIX 3-A-2: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of a Response to an Incident**

| Drinking Water System Owner | Drinking Water System Name | Date Order Issued | Order Synopsis |
|---|---|---|---|
| Highlands East, The Corporation of the Municipality of | Dyno Estates Well Supply | January 28, 2008 | • Ensure that primary disinfection is achieved at all times<br>• Ensure that the online chlorine residual analyzer is maintained, and that alarms are set to ensure continuous disinfection. |
| Laurentian Hills, The Corporation of the Township of | Chalk River Water Treatment Plant | October 3, 2007 | • Develop and implement a procedure for sampling, packaging and shipping drinking water samples<br>• Take all steps necessary to ensure that all chlorine analyzers are properly evaluated, maintained and calibrated. |
| South River, The Corporation of the Village of | South River Water Treatment Plant | November 9, 2007 | • Ensure that all necessary improvements to the wastewater treatment system are completed. |

**APPENDIX 3-B: Summary of Local Services Board Drinking Water Systems Receiving Contravention Orders in 2007-08**

| Drinking Water System Owner | Drinking Water System Name | Date Order Issued | Order Synopsis |
|---|---|---|---|
| Moose Factory Island Local Services Board | Moose Factory Island Distribution System | January 7, 2008 | • Have an Engineering Evaluation Report completed by a qualified engineer<br>• Ensure that all required documents are made available free of charge at a location accessible to the public<br>• Ensure an appropriately trained operator is designated as the Overall Responsible Operator<br>• Ensure that all microbiological, chemical and physical water quality monitoring/sampling is being conducted as required<br>• Ensure that secondary disinfection residual monitoring is being conducted and a sampling plan is created<br>• Ensure that copies of chain of custodies are being retained. |
| Peace Tree Woods Local Services Board | Peace Tree Woods Subdivision Well Supply | March 26, 2008 | • Ensure that a certified operator is in place to operate and maintain the drinking water system<br>• Maintain chlorine residual until the system has completely fragmented, or install the minimum required treatment<br>• Provide all treatment required or fragment in order to absolve the requirement to be in compliance. |
| Thorne Local Services Board | Thorne Water Treatment Plant | June 29, 2007 | • Have an Engineering Evaluation Report completed by a qualified engineer<br>• Have a qualified consultant determine the cause and possible solutions to reducing suspended solids levels. |

**APPENDIX 3-C: Summary of Laboratories Licensed to Perform Drinking Water Testing Receiving Contravention Orders in 2007-08**

| Municipal Location | Laboratory Name | Date Order Issued | Order Synopsis |
|---|---|---|---|
| Kingston, City of | Accutest Laboratories Ltd. | February 7, 2008 | • Cease providing drinking water testing services for specific tests until a licence is obtained from the Ministry of the Environment. |
| Ottawa, The Corporation of the City of | Accutest Laboratories Ltd. | February 7, 2008 | • Cease providing drinking water testing services for specific tests until a license is obtained from the Ministry of the Environment. |
| Ottawa, The Corporation of the City of | Caduceon Environmental Laboratories | March 6, 2008 | • Correct discrepancies found between the final drinking water results sent to clients and the results submitted to the Ministry's Drinking Water Information System (DWIS) with respect to units of measure<br>• Ensure that all results submitted to the Ministry's DWIS adhere to specific reporting criteria (i.e. positive integers, use of value qualifiers, data error corrective action). |

**APPENDIX 4: Summary of Municipal Residential Drinking Water System Convictions - April 1, 2007 to March 31, 2008**

| Owner of Drinking Water System | System Name | Synopsis | Sworn Date | Conviction Date | Fine |
|---|---|---|---|---|---|
| Timmins, The Corporation of the City of | Timmins (Shaw Township) Well Supply, Timmins (Mattagami) Water Treatment Plant, Timmins (McDonald Lake) Water Treatment Plant (this system has since been decommissioned) | Operate a water treatment works in contravention of a condition of the Certificate of Approval, failure to comply with terms of a Provincial Officer Order, and failure to take required water tests. | August 28, 2006 | May 24, 2007 | $84,000 |
| Red Rock, The Corporation of the Township of | Red Rock Water Treatment Plant | Failure to report adverse drinking water test result. | March 13, 2007 | July 16, 2007 | $2,000 |
| Pembroke, The Corporation of the City of | Pembroke Water Treatment Plant | Failure to review continuous monitoring results within 72 hours and failure to properly operate water treatment equipment. | December 28, 2007 | February 25, 2008 | $13,000 |
| Northeastern Manitoulin & The Islands, The Corporation of the Town of | Little Current Water Treatment Plant | Exceeded the water taking limit prescribed under the Permit to Take Water, and failure to keep test records of drinking water system sample test results. | January 23, 2007 | October 25, 2007 | $8,000 |
| Ignace, The Corporation of the Township of | Ignace Well Supply | Failure to designate a responsible certified operator for the type of drinking water system. | September 4, 2007 | January 22, 2008 | $3,500 |
| Parry Sound, The Corporation of the Town of | Parry Sound Water Treatment Plant (Currently Tony Agnello Water Treatment Plant) | Failure to report adverse drinking water test result. | September 4, 2007 | February 26, 2008 | $5,000 |
| Chatham-Kent, The Corporation of the Municipality of | Highgate Pure Water Well Supply | Failure to maintain proper operation of UV disinfection system, and failure to properly operate chlorination system. | August 23, 2007 | August 29, 2007 | $10,000 |
| Atikokan, The Corporation of the Township of | Atikokan Water Treatment Plant | Operate a water treatment works in contravention of a condition of the Certificate of Approval to maintain operations manual, and failure to comply with terms of a Provincial Officer Order. | January 4, 2007 | June 7, 2007 | $9,000 |
| **Total** | | | | | **$134,500** |

In addition, in 2007-08, three individuals were convicted and fined a total of $12,500 for drinking water violations at municipal drinking water systems. Two individual operators were convicted for a violation under the Safe Drinking Water Act, 2002 and fined $5,000 each for failing to report an adverse drinking water test result. One individual operator was convicted for a violation under the Safe Drinking Water Act, 2002 and fined $2,500 for entering false records of a drinking water test result . One operating authority was convicted and fined $10,000 under the Safe Drinking Water Act, 2002 for submitting false information to a Provincial Officer.

| APPENDIX 5: Examples of Health Related Chemical Drinking Water Quality Standards | | |
|---|---|---|
| **Chemical** | **Standard as per O. Reg. 169/03** | **Description** |
| Arsenic | 0.025 mg/L | A known carcinogen that can pose a potential health risk if the level in the water supply exceeds the standard. Can be found naturally in both ground and surface water. |
| Barium | 1.0 mg/L | Commonly found in hard water but seldom at levels above the standard. Small exceedances are not expected to cause human health impacts. Levels higher than 10 mg/L have been linked with high blood pressure. |
| Benzene | 0.005 mg/L | A known carcinogen that is occasionally found in groundwater in the vicinity of landfill sites or facilities where gasoline and solvents may have been spilled. The removal of benzene from drinking water is recommended when the standard is exceeded. |
| Benzo[a]pyrene | 0.00001 mg/L | Formed during the incomplete burning of natural compounds that contain carbon. One-time exceedances are not uncommon and are not expected to threaten human health. |
| Bromate | 0.010 mg/L | May be formed during the disinfection of drinking water using ozone or a combination of ozone and hydrogen peroxide. Intrusion of road salt into surface water sources may also result in the presence of bromate in drinking water. Short-term exceedances are not likely to lead to adverse health impacts. |
| Fluoride | 1.5 mg/L | Some areas in Ontario have naturally occurring high levels in drinking water. Where levels exceed 2.4 mg/L, the Ministry of Health and Long-Term Care recommends that the local Medical Officer of Health raise public and professional awareness to control excessive exposure from other sources. |
| Lead | 0.01 mg/L | Typically enters drinking water from corrosion of pipes, solder, and plumbing fixtures. Ingestion should be avoided, particularly by pregnant women and young children, who are most susceptible. Ontario has introduced new regulations to monitor lead in drinking water in facilities where children are likely to be exposed. Municipalities are required to conduct monitoring programs for corrosion control and take appropriate action ranging from consumer education to lead line replacements. |
| Mercury | 0.001 mg/L | Mercury exceedances in drinking water are rare and not expected. The most common source may be releases from the leachate flowing from a landfill site that may impact source water (either surface water or groundwater) in the vicinity of drinking water systems. Common sources of mercury at landfill sites include fluorescent tubes, disposable batteries, and mercury thermometers. Short-term exceedances are not expected to cause human health impacts. |
| Nitrates: Nitrates, Nitrogen (Nitrate + Nitrite) | 10 mg/L for nitrate (as nitrogen) 1.0 mg/L for nitrite (as nitrogen) 10 mg/L nitrate+nitrite (as nitrogen) | Can be present in source water as a result of decaying plant and animal material, contamination by agricultural fertilizers, sewage and naturally occurring soluble nitrogen compounds. Short-term exceedances are not uncommon. In areas where nitrate levels are above the standard, the public is informed of the potential dangers of giving the water to infants. |
| Selenium | 0.01 mg/L | Presence in drinking water can almost always be attributed to natural background. Generally accepted as a required trace element for humans and animals. Short-term exceedances are not expected to cause human health impacts. |
| Trichloroethylene (TCE) | 0.005 mg/L | Ontario revised the standard for TCE by adopting a lower value of 0.005 mg/L in June, 2006. This was the result of new scientific information of the toxicity of TCE. The levels at which exceedences were reported are not a cause for concern in the short-term but should be addressed by the municipality. |
| Trihalomethanes (THMs) | 0.10 mg/L as a running annual average of quarterly samples | By-products of drinking water disinfection through chlorination. Drinking water systems that consistently exceed the standards are required to take corrective action to reduce THM formation. Short-term exceedances of THMs are not expected to result in human health risk. |
| Uranium | 0.02 mg/L | Normally present at low levels in rock, soil and water. Short-term exceedances are not considered to result in human health risks. |

**For More Information:**

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